NOT TO BE TAKEN AWAY

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THE DIPHTHERIA BACILLUS AND SCARLATINAL INFECTION.*

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THE object of this paper is to record certain facts as to the incidence of the *Bacillus diphtheriæ* in cases of scarlet fever in Birmingham; and, further, to record observations which appear to show a connection between the presence of this germ and the persistence of scarlatinal infectiousness, with particular reference to the question of return cases. It deals with the association of this bacillus, not with clinical diphtheria, but with scarlet fever.

Attention was directed along these lines by my finding a number of cases of rhinitis associated with the presence of the Loeffler bacillus in the nose amongst those convalescent cases of scarlet fever whose arrival home from the fever hospitals had been followed by the occurrence of return cases of scarlet fever in their households. This raised the question whether the Loeffler infection had any connection with the occurrence of the return cases of scarlet fever, and it was arranged by Dr. Robertson that I should take swabs

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from the nose and throat respectively of all cases who showed scarlatinal infectivity subsequently to their discharge from hospital. It was also arranged that all cases of scarlet fever should be similarly swabbed in the city hospitals at the time of their admission to and discharge from hospital.

In February, 1912, I read a paper before the Midland Branch of the Society of Medical Officers of Health (8), in which I gave the results of this investigation up to November, 1911. Since then more work has been done upon the subject, and in venturing to bring the matter before this distinguished Society I have not only recorded this further work, but for the sake of completeness have not hesitated to repeat much of what was then said.

With the exception of the examination of the swabs taken from patients during their stay in hospital, the bacteriological work has been done by Dr. C. J. Lewis in Professor Leith's laboratory at the University of Birmingham. In addition to the routine examination of swabs Dr. Lewis has isolated the diphtheria-like bacilli in more than sixty cultures.

Definitions.

In order to avoid misunderstanding from the use of certain arbitrary terms, I will here give the definitions of some of the expressions which I am using in this paper.

The term "primary case" is to be understood to mean a case of scarlet fever whose return from a fever hospital has been followed by the occurrence in the same house of a further case or cases of that disease beginning within eight weeks of the date of return.

The term "return case" is used for such secondary cases without the assumption being made that they all, without exception, have been necessarily caused by contact with the corresponding primary cases.

Except where it is specially mentioned to the contrary, no return case has been considered or enumerated where the diagnosis of either the primary or secondary case was revised in hospital to "not scarlet fever."

No swabs have been taken from patients who have caused further cases in their households ("recovery cases") after their release from isolation practised in their own homes.

Scheme of Work.

The work reported in this paper has been devised upon the following plan:

(1) Among those cases of scarlet fever which caused return cases on their arrival home from hospital, the percentage which were infected with true *Bacillus diphtheriæ* was determined. The manner in which this was arrived at is given in detail below.

(2) For comparison with this result the incidence of the bacillus (expressed as a corresponding percentage) was also determined amongst cases of scarlet fever whose arrival home from hospital was *not* followed by the occurrence of return cases. In addition the incidence of the bacillus in scarlet fever cases during their stay in hospital was investigated.

(3) Lastly, the proportion of normal school-children showing the true *Bacillus diphtheriæ* was determined.

For the sake of clearness I have divided the paper into three sections corresponding to the above three headings, and a fourth section, in which I have made some comments upon the results.

Section I.

The bacteriological investigation of patients who had caused return cases was carried on from December the 19th, 1910, to November the 8th, 1912, a period of nearly two years (during which time 5573 cases of scarlet fever were admitted to the city hospitals).* The number of return cases which were notified in that time was 485. These occurred in 365 houses, to which 419 primary cases had returned. The difference in these figures is, of course, due to the fact that more than one primary case returned to some houses, and more than one return case occurred in others. A negligible number of these cases ensued upon the return of primary cases from fever hospitals outside the city, the vast majority being connected with cases from the city hospitals.

The primary cases were visited as soon as possible after the occurrence of the return cases, usually one to three days after notification of the return cases, and swabs were taken from the nose and throat respectively. The specimens from the nose were taken by passing the swab as far into each nasal cavity as the rigid rod would pass, and from the throat by rubbing it well on and about the tonsils. When there was otorrhœa a swab was also taken of this discharge.

* On November the 9th, 1911, the population of the city was increased by extension from 526,030 to 842,337, and return cases have been considered which occurred within the old city before that date or within the extended city on or after it.

The swabs were examined by Dr. Lewis, who inoculated tubes of Loeffler's blood-serum in the usual way, and examined the resulting eighteen-hour cultures stained by Neisser's method, and by simple stain (carbol thionin). He reported as "positive" those cultures which presented diphtheroid bacilli showing polar staining with the Neisser stain like Loeffler's bacillus: that is to say, those cultures in which it was not possible to return a negative report as to the presence of *Bacillus diphtheriæ*. In this paper the terms "positive" and "negative" are used in this sense entirely.

I myself took the swabs from all the primary cases (102) before November the 8th, 1911. After that date I also dealt with the primary cases (88) in the north-west division of the new city, those in the other three divisions (229) being examined and swabbed by Dr. John Dale, Dr. T. W. Beazeley, and Dr. Reginald Green. The results of the swabbing of those cases were as follow:—

	Primary cases.
Positive swabs from nose only	112
,, ,, ,, ear only	5
,, ,, ,, nose and ear	4
,, ,, ,, throat only	4
,, ,, ,, nose and throat	19
,, ,, ,, nose, throat and ear	1
Total positive	145
Negative swabs only	234
Swabs not taken	40
Total	419

Thus 145 of the 379 primary cases swabbed were positive, or 38 per cent. (Of the 190 cases which I myself swabbed 42 per cent. were positive; and amongst the 229 swabbed by my colleagues 35 per cent.)

It should be mentioned that only in a few instances were the cases which were reported negative subjected to a second swabbing. Had this been done the number of positives would undoubtedly have been higher. Moreover, in about eighty cases amongst those swabbed the throat swabbing was omitted for various reasons.

As I mentioned above, more than one primary case had recently returned to some of the houses furnishing return cases. As in all probability only one primary case in each of these houses had actually infected the return case, it is more useful to give the results in terms of houses where return cases contracted scarlet

fever than in terms of individual primary cases. In houses where there was more than one primary case the house is taken as positive if *any* of the primary cases gave a positive swab, and as negative if *none* of them did so. On this basis the results become:

Number of houses with positive results . . .	136
„ „ „ negative results . . .	189
„ „ where swabs were not taken .	40
Total	365

—that is, 136 positive out of 325 houses, or 42 per cent.

Besides the cases which were found to be positive when swabbed in this way after causing return cases, there were a number of other primary cases which, though giving a negative result on that occasion, had been found to be positive some time during their stay in hospital: that is to say, the percentage given above (42) is an under-statement of the number of return case houses where a primary case has given positive results at *any* time during or after its stay in hospital. In my former paper I gave results in which every patient who had given a positive swab in hospital or subsequently was treated as positive. On this basis, up to November the 8th, 1911, out of eighty-five houses where return cases had occurred, positive primary cases had returned to fifty-eight—*i. e.* 68 per cent.

It must be admitted that the microscopic identification of Neisser-staining bacilli indistinguishable from Loeffler's bacillus is not sufficient evidence in series such as these upon which to give a percentage representing the proportion of cultures containing the *Bacillus diphtheriæ*. Isolation and testing of the Neisser-positive bacillus is a necessary corollary to its discovery in mixed culture, and until this has been done it is not possible definitely to distinguish the *Bacillus diphtheriæ* from diphtheroid bacilli, which closely resemble it in being Neisser-positive and in other respects. This has become very clear from Dr. Lewis's work.

Before I published my results up to date in February, 1911, Dr. Lewis had isolated the bacillus which had led to the "positive" report in three of my positive cases, and in each one had obtained a true Loeffler culture which was virulent, killing a guinea-pig within two days of subcutaneous injection, and produced no effect in a similar guinea-pig which had previously been protected by an injection of diphtheria antitoxin. From this I concluded that it was safe to assume that most of the positive cultures contained the true *Bacillus diphtheriæ*.

As doubt was thrown upon the validity of this assumption, Dr. Lewis kindly agreed to isolate a consecutive series of these positive cultures. Dr. Dale and I were then dealing with return cases in the northern half of the enlarged city, and it was arranged that all the positive cultures which we obtained should be tested in this way. Reckoning by the date of notification of the return cases, the series began on April the 6th, 1912, and ended, with an interruption of two months in the summer vacation, on October the 17th. For nearly four months almost all the positive cases from half the city were specially investigated in this way.

The number of positive swabs in this series was thirty. (It must be mentioned that of the thirty, three were from primary cases who were afterwards found not to have had scarlet fever, though the return cases had true scarlatina. These have not been cut out of the series.) Of these thirty, Dr. Lewis was able to isolate the Neisser-positive bacillus in twenty-two instances. All these twenty-two diphtheroid organisms he tested in pure culture in sugars and by inoculation into guinea-pigs, and divided them into two groups—viz. those which were the true *Bacillus diphtheriæ* of Loeffler and those which were other diphtheroid bacilli. The Loeffler group were identified by their microscopic appearance, their appearance in both cultures, and by their producing acid in glucose and dextrine mediums, but not in saccharose. Thirteen of the twenty-two gave these reactions and were inoculated subcutaneously into guinea-pigs (1 c.c. of forty-eight hours' broth). Eleven of the thirteen were fully virulent, killing the animal within a few days with post-mortem signs typical of death from *Bacillus diphtheriæ*. The bacillus was recovered in pure culture from the local lesion in all these cases. In the other two of the thirteen the guinea-pigs developed a swelling at the site of inoculation and showed signs of ill-health, but did not die. It was concluded that these two were also *Bacillus diphtheriæ*, deficient in pathogenicity. All the thirteen cultures were also inoculated into guinea-pigs which had been protected by the injection of diphtheria antitoxin; in every case they were harmless to such protected animals. The other nine cultures of the twenty-two did not agree with Loeffler's bacillus in culture reactions (and some of them in morphology), and were non-pathogenic to guinea-pigs. They all gave Neisser-positive individuals which accounted for the appearance in the original mixed cultures that gave rise to the "positive" diagnosis.

Dr. Lewis concluded from these experiments that of the twenty-two "positive" cultures in which the Neisser-positive diphtheroid

was isolated, at least thirteen contained the true *Bacillus diphtheriæ* —*i. e.* 60 per cent.

The patients who gave the true *Bacillus diphtheriæ* exhibited the germ at the time of swabbing as follows: In nose only, six cases; in nose and ear, one case; in nose and throat, four cases; in nose, throat and ear, one case; in throat only, one case.

There appears to be no reason why the positive cultures obtained from primary cases during these particular four months should differ as to the proportion containing the *Bacillus diphtheriæ* from those given by such primary cases throughout the rest of the two years over which this investigation extended, especially as all the cultures were examined by the same observer. On this assumption we arrive at the result that about 60 per cent. of 42 per cent. (about 25 per cent.) of all houses where return cases occurred had received home from hospital a primary case from whom the *Bacillus diphtheriæ* could be recovered.

This figure can to some extent be checked in the following manner: During the four months in which the "positive" bacilli from the northern half of the city were being isolated and tested we swabbed the primary cases at forty-six houses, and obtained the true *Bacillus diphtheriæ* from twelve of them. This gives a proportion of 26 per cent. of all return case houses, as compared with 25 per cent. obtained by the other method.

Section II.

The striking fact that a quarter of this class of infectious scarlet fever convalescents can be shown to be harbouring the true Loeffler bacillus in their nose or throat subsequently to their discharge from the fever hospital is sufficient demonstration that this germ must be fairly common amongst the scarlet fever patients in the Birmingham fever hospitals. In my former paper I quoted the following extracts from the literature bearing upon the prevalence of this germ in scarlet fever.

In 1898 Todd investigated a form of external rhinitis occurring in scarlatinal convalescents which was characterised by redness at the nostrils, passing on to the formation of raw granular surfaces with crust-formation and bleeding, and often associated with spottiness of the face and pustules elsewhere, a condition familiar to all who have had to deal with scarlet fever wards. He found fifty-one (or 14 per cent.) of such cases in 365 cases of scarlet fever at the London Fever Hospital, and on taking nasal swabs obtained the bacillus in every one of the fifty-one cases. Several of these were

isolated and proved to be virulent Loeffler bacilli, which could be antagonised by diphtheria antitoxin. He obtained the same organism from the secondary pustules.

Williams (1901) did similar work, and obtained this germ from cases of rhinorrhœa and otorrhœa in scarlet fever. In a series of scarlet fever cases he examined all those which showed any rhinorrhœa, however slight, and in fifty-seven (or 40 per cent.) of 141 cases of rhinorrhœa found the Loeffler bacillus in the discharge. In sixty-eight cases of scarlatinal otorrhœa also he found five (or 8 per cent.) with this bacillus. Only a minority of the cultures tested on guinea-pigs were typically virulent.

It appears, then, well established that rhinitis and otitis in scarlet fever are often characterised by the presence of the *Bacillus diphtheriæ* in the discharge.

In regard to the frequency of its presence in uncomplicated cases of scarlet fever, or in cases in general of this disease, the most striking feature of the results recorded by various observers is the great lack of uniformity that they show.

Garratt and Washbourn (1899) (4) found that amongst 666 cases of scarlet fever admitted to the London Fever Hospital, only eight (or 1·2 per cent.) showed bacilli in the *throat* morphologically resembling the *Bacillus diphtheriæ.* Their virulence was not tested.

W. T. G. Pugh (1902) (10), at the North-Eastern Hospital, London, examined the noses and throats of scarlet fever patients on admission. Out of 415 cases uncomplicated by clinical diphtheria, seventeen (or 4 per cent.) showed Loeffler bacilli in the throat, and five of these tested on guinea-pigs were all non-virulent. Out of 414 cases uncomplicated by faucial diphtheria or membranous rhinitis, thirty-three (or 8 per cent.) showed the bacilli in the nose, and six of these tested on guinea-pigs were all non-virulent. In wards where post-scarlatinal diphtheria existed he several times found virulent diphtheria bacilli, and also in fibrinous rhinitis occurring during stay in hospital.

Escherich and Schick (1912) (2) state that Sellner found diphtheria bacilli in 2 per cent. of his (103) scarlet fever cases, Soerensen in 16 per cent. of 1500 cases (of which thirty-two had clinical diphtheria), and Ranke in 53 per cent. of his cases.

The lack of uniformity in the above results makes it appear that the prevalence of this germ in scarlet fever hospitals varies from place to place, and therefore the prevalence of the germ in the Birmingham primary cases should be compared only with the results obtained in the Birmingham hospitals.

During 1911 the scarlet fever patients in the two chief Birmingham fever hospitals, Little Bromwich Hospital and Lodge Road Hospital, were bacteriologically examined on admission and on discharge under the supervision of the Medical Superintendents, Dr. T. W. Beazeley and Dr. H. M. Cargin. At both hospitals the noses and throats of the patients were separately swabbed. The results of this work will be found in my former paper (8). At Little Bromwich 32·5 per cent. of 1063 patients were reported positive on admission (24 per cent. in the nose and 14 per cent. in the throat), and 20·7 per cent. (nose only) at the time of discharge. At Lodge Road 23 per cent. of patients were reported positive (nose or throat) on admission, and 49·6 per cent. of all patients at some time or other during their stay in hospital. Unfortunately, these figures were compiled from the results of a number of medical officers working more or less independently, and were not controlled by isolation of the suspicious organisms.

In the above-mentioned paper I worked out from the hospital figures certain results which tended to show some connection between the prevalence of the positive germs and the occurrence of the return cases, but at the same time expressed the view that the evidence was not conclusive. But in view of other evidence which I give below, I feel that more definite results might perhaps be obtained if the whole of the bacteriological examinations inside the hospitals and subsequently in the patients' homes were carried out by a single observer, and the results checked by the necessary isolation and testing of the bacilli.

I have since attacked the subject in a different way. Knowing what proportion of patients causing return cases have true *Bacillus diphtheriæ* which can be demonstrated by swabbing, I have tried to get corresponding figures for patients who have not caused return cases, my object being to compare the incidence of the true Loeffler bacillus after discharge from hospital in those who remain capable of spreading scarlet fever with the incidence in those who have not shown themselves to be infectious. For this purpose I visited about a hundred cases ten days after their return from the fever hospital, and took swabs from the nose and throat respectively of each. Dr. Lewis examined the resulting cultures, and in all cases where he found bacilli showing polar staining with the Neisser stain and resembling the *Bacillus diphtheriæ* he isolated and investigated these bacilli. This work lasted from July the 22nd to July the 26th, 1912, and after the summer vacation from October the 15th to December the 19th, 1912. On most of the weekdays

during this time I swabbed a proportion of the cases who had been out of hospital ten days and who had not caused any return case. Altogether the series comprised 107 cases, but five of these subsequently caused return cases and were, of course, excluded. The cases were quite unselected, except that in the latter half of the series no cases were swabbed unless there was at least one child in the house aged under fifteen who had not had scarlet fever. The ages of the 102 cases which comprised the series were as follows :

0–1 year	0 cases	8– 9 years	7 cases
1–2 years	2 „	9–10 „	4 „
2–3 „	2 „	10–11 „	3 „
3–4 „	8 „	11–12 „	9 „
4–5 „	13 „	12–13 „	2 „
5–6 „	16 „	13–14 „	3 „
6–7 „	12 „	14–15 „	5 „
7–8 „	8 „	over 15 „	8 „

In the 102 Dr. Lewis found twenty with Neisser-positive polar staining bacilli. He plated out all these and succeeded in isolating the Neisser-positive bacillus in all except two cases. In the eighteen cases in which isolation was successful the bacillus in seven instances proved to be the true *Bacillus diphtheriæ*, as determined by morphology and culture reaction (see above). All seven proved virulent to unprotected guinea-pigs and produced fatal results, though in two cases death did not take place until the tenth and eleventh day respectively, with necrosis at the site of injection. The bacilli were recovered in pure culture from the local lesions. All the seven were harmless to guinea-pigs previously protected by the injection of diphtheria antitoxin. The other eleven isolated bacilli did not correspond with Loeffler's bacillus in culture reactions, and some also in microscopical appearance. Thus about 7 per cent. of the patients whose return from hospital gave rise to no return cases showed the true *Bacillus diphtheriæ*, contrasting with 25 per cent. of those who did show themselves in this way to be able to infect others with scarlet fever. Even then it is possible that some of the seven were really infectious, but for various reasons, such as immunity to scarlet fever, on the part of other members of their households, were unable to cause return cases. Indeed, some of them had nasal conditions which one knows to be frequently associated with the production of return cases.

Section III.

When I was in possession of these facts as to the distribution of this germ in scarlet fever, it appeared desirable to compare them

with the prevalence of the same germ in the normal population, especially amongst children, who, of course, furnish the bulk of our scarlet fever cases.

The most comprehensive piece of work on these lines appears to be that recorded in the "Report on Diphtheria Bacilli in Well Persons" (1902) (9) of a Committee of the Massachusetts Association of Boards of Health. In this investigation over 4000 persons were examined, and the results were divided into two groups. In the case of 3096 persons from communities practically free from diphtheria, 1·4 per cent. showed typical diphtheria bacilli, of which 0·9 per cent. had them in the nose, and 0·6 per cent. in the throat. Fifty-five of these positive cultures were tested and five proved to be virulent. In the case of 1154 persons, almost entirely children, in institutions where diphtheria had existed from one to eighteen months previously, the figures were higher, viz. 2·9 per cent., of which 2·1 per cent. showed the bacilli in the nose, and 1·5 per cent. in the throat. Thirty-one of these positive cultures were tested and six found to be virulent. The difference between these two sets of cases is attributed by the Committee to the difference in the prevalence of diphtheria in the communities under consideration. This conclusion is obviously of great importance when we are considering the distribution of this bacillus.

That diphtheria bacilli are frequently to be found in healthy persons who have been exposed to the infection of diphtheria is well known. Graham-Smith (1908) (5) points out that the frequency of this occurrence depends largely upon the intimacy of contact, a larger proportion of carriers, for instance, being found in the members of the families of diphtheria patients than in the scholars of diphtheria-infected schools. Seligmann (1911) (11) has noted that in diphtheria-infected institutions the departments with fewer cases tend to contain fewer "carriers" than the departments with greater numbers of cases (he dealt mainly with the throats only). Steenmeyer (12) failed to find diphtheria bacilli in the throats of forty-four children in a Dutch village which had been free from diphtheria for ten years, but in the throats of forty-one children of Utrecht, where diphtheria was endemic, he found diphtheria bacilli in several. Graham-Smith (6) concludes that virulent diphtheria bacilli are very rarely found in the throats and noses of healthy persons who have not been in immediate or remote contact with cases of diphtheria, but that in 2 to 3 per cent. of persons unexposed to infection bacilli are to be found differing from ordinary diphtheria bacilli only in their non-virulence to guinea-pigs.

The fact that the degree of prevalence of diphtheria in a community is reflected in the prevalence of the bacillus in healthy persons must therefore be held to explain the great disparity which appears amongst various published results (3).

For this reason I did not feel justified in making any assumption as to the prevalence of the *Bacillus diphtheriæ* in the Birmingham population. I therefore resolved to take swabs from a number of normal school-children. For this purpose I selected two schools, and, beginning in January, 1913, took swabs from the nose and throat respectively from certain of the scholars (by kind permission of Dr. G. A. Auden, School Medical Officer, Birmingham). One school (D) had been entirely free from diphtheria for at least eighteen months, and during that time had produced only a few cases of scarlet fever. The other school (N) had produced only three cases of diphtheria during the past two years, but had been afflicted with a considerable outbreak of scarlet fever during the autumn and winter, cases continuing to occur in abundance during the time that I was taking swabs. I selected only children who gave a history of never having had scarlet fever or diphtheria. In all, ninety-nine children were swabbed, fifty of one sex and forty-nine of the other. Half were from school D and half from school N. The ages of the children swabbed were as follows:

5–6 years	16 children	10–11 years	3 children
6–7 „	25 „	11–12 „	2 „
7–8 „	22 „	12–13 „	8 „
8–9 „	11 „	13–14 „	10 „
9–10 „	1 child	14–15 „	1 child

Amongst the cultures from the ninety-nine children Dr. Lewis found "positive" bacilli appearing to warrant further investigation in eighteen, and all of these he isolated and tested. Seven of the germs proved to be Loeffler's bacillus, as judged from microscopical appearance and culture and sugar reactions. Of these seven one was fully virulent to the guinea-pig, but not to the antitoxin-protected animal, and the other six only produced slight local swellings at the site of injection. The other eleven positive bacilli proved not to be the *Bacillus diphtheriæ* by the above tests. Thus amongst these school-children 7 per cent. gave true *Bacillus diphtheriæ* (of which only a minority were fully virulent). It will be noticed that the Loeffler bacilli from these school-children were less virulent than those from the scarlet fever convalescents. In the school D, comparatively free from scarlet fever, only two children (4 per cent.) showed the *Bacillus diphtheriæ*; whereas in the

school N, where scarlet fever was prevalent, five (10 per cent.) did so.

The fact that such a distribution of these germs occurs in schools which are almost free from diphtheria has an important bearing on the question of the administrative action to be taken in regard to such apparently harmless "carriers" when diphtheria cases do occur.

Prevalence of Clinical Diphtheria in Birmingham.

A point of interest in connection with these observations is the fact that neither the post-scarlatinal diphtheria-rate in the Birmingham fever hospitals, nor the diphtheria rate for the city, is high, in face of the fact that there is such a wide distribution of the *Bacillus diphtheriæ* in the scarlet-fever wards of the hospitals, and a constant discharge of patients with this germ from the hospitals back into the general population.

In 1910 and 1911 together the post-scarlatinal diphtheria-rate in Lodge Road Hospital was 0·7 per cent. reckoned on 545 admissions, and in Little Bromwich Hospital 0·2 per cent. on 3703 admissions. The returns for the two hospitals, however, give a higher rate for cases admitted with simultaneous scarlet fever and clinical diphtheria during those years—namely, 1·3 per cent. of scarlatinal admissions for 1910 and 3·4 per cent. for 1911. The above figures are from the Annual Reports of the Medical Superintendents (1).

The diphtheria death-rate for Birmingham (old city) for 1910, 1911, and 1912 was 0·11, 0·13 and 0·12 per 1000 respectively, which was nearly the same as that for England and Wales generally, and less than that for many other large towns.

Section IV: Conclusions.

The fact that typical *Bacillus diphtheriæ* was isolated from the scarlatinally infectious "primary" cases in 25 per cent. of instances,* but only in 7 per cent. of those cases of scarlet fever whose return from hospital had not produced return cases, and in 7 per cent. also amongst normal school-children, seems to show that the presence of this germ in the nose or throat of cases of scarlet fever is often associated with a prolongation of the period of scarlatinal infectiousness; and that the presence of the germ is indicative of an increased

* This is in terms of houses. The corresponding figure for total "primary cases" is 23 per cent.

probability of such infectiousness. The question then arises how this is brought about.

It is well known that rhinitis (and sometimes otorrhœa) is common among the patients who produce return cases, and most observers hold the reasonable opinion that it is then the actual cause of the return case. We also know from such work as that of Todd (14) and of Williams (15) that the *Bacillus diphtheriæ* is very frequently present in such conditions. These two circumstances together may conceivably be the explanation of the association of scarlatinal infectiousness with the presence of the diphtheria bacillus.

At once we are faced with the question whether the bacillus is the cause of the rhinitis or only an association. Its invariable occurrence in the scarlatinal rhinitis investigated by Todd supports the idea that at any rate in such cases as those it is the actual cause. Cases of fibrinous rhinitis in scarlet fever are generally held to be due to the diphtheria bacillus. Graham-Smith (7) collected cases of "chronic membranous rhinitis" from various investigators, and states that all the (eighty-four) cases showed diphtheria bacilli, of which seventy-six were virulent. In atrophic rhinitis also Symes (13) found that out of twenty-three cases (mostly adults) these bacilli were present in twenty, and that both of the two that he tested on guinea-pigs behaved like virulent Loeffler bacilli. On the whole it appears probable, though not certain, that the rhinitis is the result of infection with the bacillus.

In my former paper on this subject I mentioned that of ninety-eight primary cases no less than sixty-seven (*i. e.* 68 per cent.) had suffered from rhinitis since return from hospital, as shown by nasal discharge, or sore nostrils, or by a history of "cold in the head" since return; and of these sixty-seven persons, fifty (or 74 per cent.) gave positive swabs some time after the onset of their illness.

On the other hand, a number of return cases have followed upon the return from hospital of patients who have not had any signs of rhinitis, and who yet show bacilli morphologically, like Loeffler's bacilli (in some instances definitely proved to be *Bacillus diphtheriæ*).

If the action of the diphtheria bacilli is merely to keep alive a pathological condition (rhinitis) in which the hypothetical germs of scarlet fever can continue to remain virulent, presumably this is a property shared by other organisms which can cause rhinitis (I have seen many cases of rhinitis during and after scarlet fever in which negative swabs were repeatedly given). It may be, however, that

this bacillus has a peculiar property itself of enabling the virus of scarlet fever to flourish (symbiosis) even without causing rhinitis.

Bearing upon the mode of action of the bacilli I have collected cases of scarlet fever occuring during the period (two years) under review in which the scarlet fever (confirmed as to diagnosis after admission to hospital) occurred after the return to the same house of a patient from the fever hospital who was sent in for supposed scarlet fever, but in whom the diagnosis was revised to "not scarlet fever." None of these primary cases gave any evidence either in hospital or subsequently of having contracted scarlet fever during their stay in the institution. I have not counted cases in which the first patient had clinical diphtheria.

In this series I have fourteen cases, of which twelve were swabbed after the occurrence of the return case; and of these twelve, eight were positive and four negative (two of the three positives which were isolated proved to contain typical *Bacillus diphtheriæ*). I think these cases are particularly significant as admitting of the explanation that in contracting these bacilli, which are so prevalent in the scarlet fever hospital, the patients thereby became able to spread scarlet fever, although they themselves had not shown any signs of this disease—as if the diphtheria germ brought with it the scarlatinal virus.

It may be here stated that the hospital results have not shown the return cases to give a much higher proportion of positive results at the time of admission to hospital than cases in general. During 1911 thirty-four out of ninety-six return cases thus examined on admission gave positive results—*i. e.* 35 per cent. compared with 30 per cent. (both hospitals) for all cases. It should be noted that this refers to total "positives" and not to definitely proved *Bacillus diphtheriæ*, the necessary isolation not having been carried out.

As bearing upon this connection between the diphtheria bacillus and scarlatinal infectivity, it is interesting that there is some evidence of a certain degree of clinical and epidemiological interdependence between the two diseases. For instance, it is the experience of many fever hospital doctors that scarlet fever cases are more liable to contract diphtheria than are normal children, and the two diseases seem to be more frequently co-existent in one patient or one family than mere chance would explain. The distribution of diphtheria throughout the year in this country also corresponds with that of scarlet fever, both diseases increasing in prevalence during the latter half of the year. There is also a partial tendency for the cyclical variation in scarlet fever from year to year to be accom-

panied by corresponding variations in diphtheria—that is to say, scarlet fever "epidemics" are often simultaneous with similar increases in diphtheria. The Birmingham figures for the past twenty years show this latter correspondence to be only partial, and there are certain other respects, such as the epidemic wave-length of the two diseases in schools, in which they are quite at variance. However, I have noticed that in schools where outbreaks of scarlet fever are occurring there are not infrequently more cases of diphtheria than usual.

The natural corollary to concluding that the diphtheria bacillus in scarlet fever cases tends, either by causing rhinitis or in some other manner, to increase the proportion of return cases, is the consideration of how to keep hospital cases free from the germ. If the positive patients were to be isolated from the negative ones on admission, the "positive" wards would have to be almost as big as the "negative" wards, and the practical difficulty would arise of the impossibility of making an accurate diagnosis in some cases of the bacillus in question without isolating and testing it. A further difficulty would arise from the definite fact that a patient may have the germ about his nose or throat without it being revealed on one swabbing. Moreover, at any rate in wards where this rigid separation is not practised, cases of rhinitis with this bacillus frequently occur, and such cases can quickly infect others in the ward who were previously negative. The nurses in scarlet fever wards are sometimes found to be "positive," and this would probably be another difficulty. Attempts to avoid discharging patients with the *Bacillus diphtheriæ* would be met by the difficulty that the condition is often very intractable, and may persist a long time. I have seen cases which remained positive for more than a hundred days after discharge from hospital. I understand that the injection of diphtheria antitoxin does not clear up the germs, and I have no knowledge or information as to the more hopeful method of injecting vaccines of the bacillus.

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AN EPIDEMIC OF SPECIFIC PAROTITIS IN SCHOOL-CHILDREN.

By Alexander Graham, M.B., B.Sc.,
Formerly School Medical Inspector, West Ham.

A girl, aged 7 years, attending the School Clinic was found during one of her visits to be suffering from specific parotitis. This case was investigated and followed up, disclosing an epidemic of a mild type occurring during the first three months of the present year.

On the accompanying sketch of the borough the affected district is marked A, and constitutes about one-eighth of the borough area, enclosing some sixty streets from which are drawn the children who attend the four schools marked cn, b, n, ce.

The four schools under review have accommodation for 5848 children, who form roughly one eighth of the school population of the borough. The schools may be taken as fully occupied, since an additional temporary department at one of the schools makes up for any vacant places which may arise in these schools.

The distribution of the houses in this area makes ce and cn much nearer each other than to either b or n.

Table I shows that 222 children (4 per cent. of the total number of children in these schools) were affected. This number does not include 51 children, suffering from parotitis, who had not yet entered school.

Of the total 222 children affected 97 (43·7 per cent.) were boys and 125 (56·3 per cent.) were girls.

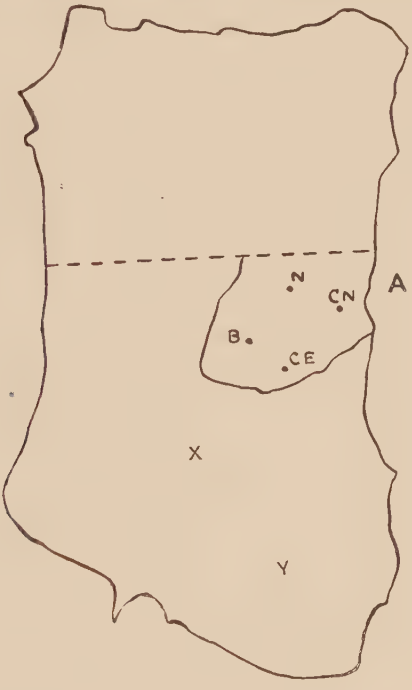
It might be well to point out that the departments in these schools are autonomous.

TABLE I.—*Showing Number of Cases in the several Departments with their Time Incidence.*

	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March.	Total.
School CN.								
Infants.	—	—	—	—	1	4	6	11
Girls .	1	—	4	1	9	3	3	21
Boys .	—	—	—	—	2	2	2	6
School B.								
Infants.	—	—	—	—	1	36	28	65
Girls .	—	—	—	—	—	8	9	17
School N.								
Infants.	—	—	—	—	1	—	4	5
Girls .	—	—	—	—	—	—	3	3
Boys .	1	—	—	—	—	1	—	2
School CE.								
Infants.	—	—	—	—	1	28	31	60
Girls .	—	—	—	—	—	4	12	16
Boys .	—	—	—	—	—	—	16	16
Total .	2	—	4	1	15	86	114	222

West says that "though parotitis sometimes occurs as a sporadic affection it is more commonly met with as an epidemic." In the above table it would appear that the cases which occurred in the last quarter of 1912 were of a sporadic nature and that the epidemic did not develop till the first quarter of 1913. In the course of an interesting and careful scientific inquiry into the pathology of "a fatal illness in children associated with acute interstitial parotitis," Gordon points out that "we have had an extensive outbreak of mumps this year." Gordon's four fatal cases occurred in May and June at the tail end of the epidemic. Now in an epidemic of scarlatina, a few mild cases may usher in the oncoming wave and gradually a mixture of mild and severe cases follows. Here and there a case of malignant (toxic) scarlet fever may appear; but it is usual to find such toxic cases grouped near the end of the epidemic. Up to the present there is nothing to suggest that these toxic scarlet cases may be a separate disease, but they may be looked on as cases in which the virus is reinforced and operating on suitable

soil. In Gordon's disease (malignant parotitis) the virus may simply be reinforced infection and be acting as in malignant scarlet fever. In Gordon's cases the clinical signs of parotitis were insignificant; and in the majority of the patients in the present investigation the clinical symptoms were mild in type. Gordon does not mention the state of the teeth, alveolar margin and buccal mucosa except cursorily in one of his cases. Mumps is assuming a distinctive place among the infective fevers, and Still's contention "that there seems very little ground for excluding it from specific



diseases" appears fully justified. In Gordon's cases three were boys and one was a girl; two were under 2 years and the remaining two were 5 and 9 years respectively.

Cautley states that parotitis is most common in cold weather, infants are remarkably immune, and the disease is rare in early childhood.

Grouping the children according to the phases of dentition up to the age of 14 (at 5 years complete temporary set of 20; at 12 years a complete set of 24; and at 14 years a complete set of 28) the following table results:

TABLE II.—*Age Incidence.*

Below 5 years.	6 to 12 years.	13 to 14 years.
73	136	13

Children are not now admitted to school under the age of four. It is interesting to note that during the dentition phase when the teeth are at the transition stage and showing the greatest amount of caries the figure of incidence of parotitis is highest. At that period (6 to 12 years) no less than 61·3 per cent. of the total number were affected.

Class incidence.—Children in the same class, of the same age, and living near each other, show separating periods ranging from 10 to 21 days in the exhibition of the clinical signs.

Family incidence.—In seven families the time of onset in the several members of each family was carefully inquired into and gave an incubation period of from 8 to 20 days.

Where definite information could be obtained it was found that the left side was affected first oftener than the right in the proportion of about 3 to 1.

Still speaks of a second attack as being rare. In this connection the following observation may be of some interest. In a family of six children, of whom five were in attendance at the same school, three were suffering from mumps, two who had had mumps at a previous time escaped, and a child of 2 years was under treatment at the same time for tonsillitis and adenitis.

Mode of spread.—In sifting the data it was found that members of the same family were in attendance at different schools. It was also noted that at least two families were attending these schools who were not correctly entitled to do so because of the distance of their homes from the schools.

Members of the same family in different schools: H. T—, attending school CN, J. T—, attending school N, and G. T—, attending school B, were attacked about the end of February.

G. G—, attending school B, showed the clinical signs of mumps about the beginning of February, and a brother, A. G—, who attended school H just outside the affected area suffered from the condition about January the 18th. Here we have a possible clue to the spread from one school to the other.

N. C—, attending school B, and S. C—, attending school CE, had mumps about the third week in February.

From school B, a child living at the position Y on the sketch was sent home with a swollen neck at the end of February. At about

the same time as he was affected the condition appeared in the school in Y district. And from the position X two brothers were attending school CE well out of their legitimate district and suffered in the early part of March.

Effect on the future of the child.—A rough calculation may put the loss in grant occasioned by the above outbreak at between £30 and £40. This monetary value in the official mind will be looked upon as slight. But in view of the great and increasing importance attaching to the Choice of Employments Act the absence of a child from school now is of grave moment. Its chance of employment will depend much on the class to which it attains before leaving school.

Conclusions.

(1) An epidemic of mumps presents all the features of an epidemic of any of the infectious fever.

(2) Malignant cases may occur (Gordon's cases), as in scarlatina, at the end of the epidemic.

(3) Members of the same family should attend the same school.

(4) Children should attend the schools in their own districts.

(5) The control of an epidemic by closing a school or part of a school will become increasingly difficult owing to children's visits to cinemas.

(6) So soon as any suspicion of an epidemic or even the presence of an infectious disease presents itself to the teacher, the school medical service should at once be put in operation to control its progress, and limit if possible the severity of individual attacks by appropriate hygienic advice.

(7) No epidemic of a supposed mild disease should be looked on lightly.

(8) Every means possible should be taken to avoid the absence of children from school, and the principal weapon in this direction is the school medical service.

I am indebted to the Chairman of the West Ham Education Authority for permission to publish this paper. My thanks are due to the head-masters and head-mistresses of the schools named for their kindly co-operation, and also to Nurses E. H. Tanner and A. Rate for their valuable assistance.

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THE INTESTINE AS A PATHWAY OF INFECTION TO THE TUBERCLE BACILLUS, WITH SPECIAL REFERENCE TO THE PART PLAYED BY DIARRHŒA.*

By Leonard Findlay, M.D., D.Sc. (Glasgow).

In view of the great divergency of opinion regarding the question as to whether the healthy intestinal mucosa is pervious to the tubercle bacillus, and of the faulty technique in many of the experiments carried out to elucidate this point, and because it is one of great practical importance, the author carried out a series of experiments with improved technique. The *materies morbi* in the form of a culture of the bacilli was suspended in oil and placed in a gelatin capsule, which was slipped just within the nozzle of a stomach-tube and ejected by forcing a stream of water through it after its passage. It had been previously found that the introduction of an emulsion of the bacilli by the stomach-tube almost invariably gave rise to insufflation tuberculosis, and any abdominal operation for its introduction directly into the stomach allowed of infection of the peritoneum.

In consequence of the frequency with which catarrhal conditions of the intestine are present in childhood, the period of life when the tubercle bacillus is believed to enter most frequently by the intestine, the question was studied in normal rabbits and in rabbits which had recently suffered from intestinal catarrh. This was induced by means of an infusion of senna and gamboge. Both the human and bovine types of the tubercle bacillus were experimented with.

In a series of twelve healthy animals fed as above described with bovine tubercle bacilli, and killed at periods varying from four to ten days later, living tubercle bacilli were demonstrated in the mesenteric glands from two of the cases by animal experiment. In another series of five rabbits which had previously suffered from diarrhœa and killed six to eight days after the ingestion of the organisms, living bacilli were demonstrated in the mesenteric glands in one case. In neither series were living bacilli found in the lungs.

In healthy rabbits fed on living bovine tubercle bacilli and allowed to live for prolonged periods, tubercular lesions were discovered in all those that survived at least fifty days. The appendix

* An abstract of a paper read before the Section of Diseases of Children of the Seventeenth International Congress of Medicine, London, on August the 7th, 1913.

and adenoid patch at the ileo-cæcal valve were invariably the seat of nodules, the mesenteric glands less frequently, and the lungs only when the experiments were at least of seventy days' duration. In a similar series of long-period experiments in which the rabbits had previously suffered from enteritis, induced by gamboge and senna, tubercular lesions developed as early as nineteen days, and were present in all that survived at least thirty days. The lesions were similarly distributed, but much more extensive and more frequently generalised. A diarrhœal animal presented lesions at twenty days as extensive as those found in a healthy animal after a duration of sixty days.

Healthy rabbits fed on tubercular sputum and on emulsions of human tubercle bacilli and allowed to live for long periods afterwards did not develop tuberculosis. In sixteen animals so treated, tubercle bacilli were detected on one occasion in films of the mesenteric glands, while of five rabbits which had previously suffered from diarrhœa, four killed at periods varying between thirty-seven and sixty-three days after the ingestion presented tubercular lesions. The animal which remained free of tuberculosis had recovered for about eight days from the symptoms of enteritis, whereas in the other animals the inoculation took place only two days after the cessation of the diarrhœa. The lesions when present were situated in the appendix and adenoid patch at the ileo-cæcal valve, and in the mesenteric glands. As one can understand, the lesions with the human type of the bacillus were much less extensive, and in marked contrast to the experiments with the bovine type of organism, where the intestinal mischief was invariably the most extensive, the mesenteric glands were more severely affected than the bowel.

Conclusions.

(1) Healthy rabbits can be infected by the ingestion of large amounts of bovine tubercle bacilli.

(2) The bacilli can pass through the apparently intact intestinal mucous membrane and reach the mesenteric glands within a period of six days; this, however, does not frequently happen.

(3) When infection occurs the intestine is invariably the seat of lesions, and thus tuberculosis of any organ, other than the intestine, is always a secondary infection when the bacilli have entered by the intestinal route.

(4) Catarrh of the intestine does not favour the passage of the

tubercle bacillus through the wall, but allows of a more constant, and also of an earlier and more wide-spread infection of the bowel, and in this way facilitates dissemination.

(5) Healthy rabbits apparently cannot be infected by the ingestion of large amounts of the human tubercle bacillus.

(6) Rabbits just recovered from intestinal catarrh developed tuberculosis after the ingestion of human tubercle bacilli.

(7) With the human type of organism a local lesion, though always present, may be slight in comparison with the diseased foci in the mesenteric glands.

(8) It would seem that the best means of combating the spread of bovine infection in childhood—until tuberculosis of cattle is eradicated—is in the avoidance of everything likely to cause intestinal catarrh.

XVIIth International Congress of Medicine.

London, August the 6th to the 12th, 1913.

SECTION OF DISEASES OF CHILDREN.

President: Dr. Eustace Smith.

Surgical Treatment of Tuberculosis.—Dr. V. Ménard (Berck-sur-Mer) said that tuberculous osteitis should be separated from tuberculous osteo-arthritis. Evacuation was often applicable for the cure of tuberculous osteitis, especially with fistulæ, whether distant from or close to the joints. The local treatment of tuberculous arthritis depended on the conservative method, which was almost always successful if applied throughout the whole course of the disease. The best operative methods, including filling, could not be substituted for conservative methods.

The most pressing indication for operation—septic suppuration—was usually due to neglect in the conservative treatment. Surgical interference was also required for associated and accidental infections and certain cases of joint tuberculosis. An operation such as drainage or atypical resection removed an obstacle to local repair. Mortality from operation was very low except for hip disease, and the results were good if the after-care was properly carried out.

In spite of the progress of medical treatment of glandular tuberculosis, there was still a part for surgery to play in the rapid removal of a localised mass of glands in the groin, axilla and neck. The length of the scar could easily be limited. Whether operated on or not, the patient could only recover if placed under favourable conditions for a long time.

The Necessity for a more thorough Control of the Milk Supply in combating Surgical Tuberculosis in Childhood.—Mr. H. J. Stiles (Edinburgh), as the result of his experience at the Edinburgh Hospital for Sick Children, was convinced that Koch was mistaken in disregarding milk as the source of tuberculous infection in children. Though pulmonary tuberculosis in adults was usually due to infection through the respiratory tract, in children infection was usually conveyed through the alimentary canal. Of sixty-seven tuberculous bone and joint cases investigated by his assistant, J. Fraser, the bovine bacillus was present in forty-one (61 per cent.) and the human bacillus in twenty-three (34 per cent.), while in three cases both types were present. Forty-one children were under four years, and of these 78 per cent. owed their disease to the bovine bacillus. The same bacillus was the organism found in all the children aged less than twelve months, and these had all been fed entirely on cow's milk. Of seventy-two cases of tuberculous cervical adenitis operated on at the Sick Children's Hospital and investigated by A. F. Mitchell, in sixty-five the disease was due to bovine bacilli and in only seven to the human bacillus.

Thirty-eight of the seventy-two occurred in children under five years, and of these all but three were bovine affections.

In sixty-four cases the tonsils were removed from children suffering from tuberculosis of the upper carotid glands. Histological evidence of tuberculosis was found in 39 per cent. The bovine bacillus was found in twelve and the human in three cases.

Mr. Stiles held that the prevalence of tuberculosis in his country was due to the frequency of the disease among dairy-cows and to the rarity with which milk was sterilised.

The First Signs of Pulmonary Tuberculosis in the Infant.—Dr. P. van Pée (Verviers) advocated Goldscheider's method of percussion as the simplest and most precise means of examining the lungs of infants. After experience of his method the speaker differed from the majority of pædiatrists, who hold that tuberculosis in infants is usually latent, and that its manifestation is rapidly followed by a fatal issue. In the immense majority of cases he believed it was possible to suspect, if not to affirm absolutely, the presence of tuberculosis, and that most of these cases, as in the adult, were of chronic evolution, with a tendency to relapses and further extension.

Causes of Death among Infants during the first four weeks after Birth (Joint Sessions on the Sections of Diseases of Children, of Obstetrics and Gynæcology, and of Hygiene and Preventive Medicine).—Dr. A. K. Chalmers (Glasgow) said that the deaths under one month formed almost one third of the total deaths throughout the year, and that those occurring in the first week made up a half of those occurring in the first month. Two thirds of these deaths within a month were due to an inborn physiological inability to live rather than to acquired disease. Statistics showed that urban infants were nearly as healthy at birth as those born in rural districts, and that the mortality in the first month was the same in both. Deaths certified as due to premature birth had increased disproportionately in the last ten years. Stillbirth appeared to be more common at the beginning and again at the end of the child-bearing period.

Dr. H. Koplik (New York) laid stress on the close connection between infantile mortality in the first month and pre-natal influences, such as syphilis, tuberculosis, heart disease and diabetes in the mother. From

statistics compiled by him from the Board of Health records of New York City, he had found that 4·1 per cent. of all children born died during the first four weeks of life. Of all children who died in the first year, 33·3 per cent. died in the first month. The largest number of deaths occurred in congenitally weak infants, and accounted for half the total deaths. The next greatest cause of death was injury at birth, or sepsis with umbilical hæmorrhage. Syphilis, probably owing to difficulty in diagnosis, accounted for only a few deaths—47 out of 2732. Pre-maternity hospitals and instruction were urgently needed. Artificial feeding by a well-trained mother or nurse was preferable to wet-nursing.

Dr. Wallich (Paris) said that of 4833 deaths in the first month, 571 died before the fourth day, 297 from the fifth to the ninth day, 401 from the tenth to the nineteenth day, and 239 from the twentieth to the twenty-ninth day. The mortality during the first month was considerably greater than in the other months of the first year, varying from a quarter to a half of the total mortality. The number of deaths was greatest during the first three weeks. Among the causes of death prematurity was the most important, next injury at birth, and then gastro-intestinal disorders.

Influence of Ductless Glands on Development.—Mr. Hastings Gilford (Reading) discussed the question of the ductless glands from the clinical and experimental standpoint, and said that the causes of their defective or excessive action must be sought in genetics. The leading part in the concerted action of the ductless glands was probably played by the thyroid, which supplied a stimulus for the body as a whole. During infancy and childhood the influence of the thyroid was checked by the thymus gland, the lymphatic system, and perhaps by the pineal gland. These delayed sexual activity, and were essential for the proper maturation of the body as a whole. The adrenals were probably the first to awake the dormant sexual organs and hasten the growth of the muscular and skeletal systems. The skeletal system was still further stimulated at the same time by the secretions of the pituitary gland, which also hastened the development of every organ in the body, including the sexual glands.

Chronic Incomplete Suprarenal Insufficiency in Children.—M. d'Œlsnitz (Nice)—In childhood, either spontaneously or as the sequel of an acute disease, certain troubles attributable to partial insufficiency of the suprarenals may be met with, troubles which, though ill-marked, are persistent, and are likely in course of time to have a bad effect on the general condition and development of the child.

In very young children delay in development is noted, the weight remains stationary, the height does not increase, the muscles are flabby, and walking is delayed. The child is apathetic and sometimes drowsy. Suprarenal treatment or administration of small doses of adrenalin causes a more or less rapid disappearance of these symptoms. A little later there is delay in increase in height. In the oldest children, especially in boys before puberty, a state of apathy is noticed, together with physical and mental sluggishness. The blood-pressure is low. Suprarenal opotherapy causes a rapid improvement of the mental and physical symptoms. The child becomes more lively, works better, is less easily fatigued, the blood-pressure rises, and the height and weight increase in a few months.

Though a similar condition may undoubtedly be produced by other causes than suprarenal insufficiency, the occurrence of the symptoms

described justifies a prudent trial of suprarenal treatment, the success of which confirms the reality and relative frequency of incomplete suprarenal insufficiency in infantile pathology.

Infection of the Urinary Tract in Children with Colon Bacilli.—Dr. JOHN THOMSON (Edinburgh) read a paper based on seventy-one personal cases. In thirty-two the symptoms had set in shortly after some weakening disease or experience. In three fourths of these cases this had been some bowel trouble. The disease was twice as common under two years as after that age, and was generally more severe in younger children. There was, however, an extremely chronic type almost entirely confined to later childhood, and usually arising after an acute illness, especially measles. Seventy-nine per cent. of his cases occurred in girls, thus indicating that an ascending infection by the urethra was common. In young infants diarrhœa was a more frequent initial symptom than in older children, and was more marked in boys than in girls. During the first six months of life far more boys than girls were affected, but after the sixth month girls largely predominated. Rigors were extremely rare at the onset in boys but frequent in girls. Mild cases of *B. coli* infection were rare in boys, among whom there was a much larger proportion of cases of fatal pyelonephritis than among girls. The frequency of pyelonephritis in boys was explained by the infection having passed straight from the bowel to the kidney instead of having passed upwards from below.

The symptoms depended upon the severity of the inflammation and the part of the urinary tract affected. In cystitis the symptoms might be ill-marked, especially if the child was already ill with intestinal or other disorders. Sometimes there was frequent or painful micturition, and perhaps some hæmaturia and an offensive odour of the urine.

There was little or no pyrexia.

The most important cases were those in which the parts above the bladder were affected—pyelocystitis, pyelitis and pyelonephritis. In these the local symptoms were slight and the general disturbance very severe. The appearance of the urine was much the same whether the case was one of simple cystitis, pyelitis, or pyelonephritis. On passing it was usually slightly cloudy or opalescent, decidedly acid, and contained numerous pus-cells and *B. coli*. Treatment: Large quantities of fluid should be given, if necessary by stomach-tube or *per rectum*, and the bowels should be freely moved. Other forms of treatment were: (1) Alkalinisation of the urine, for which large doses of potassium citrate were needed; 60 gr. should be given if the patient were under two years, and often double that amount was required. (2) Antiseptics: Salol was of most use when given in addition to alkalies in doses of 3 or 4 gr. three or four times a day. Urotropine and its derivatives were usually ineffectual in *B. coli* infection. (3) Serum and vaccine treatment: Dr. Thomson had had no experience of the first, and with the latter he had had disappointing results.

(To be continued.)

Société de Pédiatrie, Paris.

June the 10th, 1913. (*Bulletin No.* 6.)

Intractable Vomiting cured by Hypersaccharated Homogenised Milk.—M. Variot showed a male infant, aged 9 months, who had suffered from vomiting since birth. His weight was kil. 4·450, height 61·5 cent. As he had vomited the breast milk, the mother had tried, without success, several kinds of milk and milk mixtures. Variot first put him on eight meals daily of condensed sweetened milk (Gallia brand)—three teaspoonfuls to 90 grm. of boiled water. The vomiting ceased immediately, and the child gained 110 grms.' weight in twenty-four hours. Radioscopy negatived the presence of any tuberculous focus in the thorax, but the stomach, which contained a large quantity of air, was very dilated. The improvement continued until the mother substituted another kind of condensed Swiss milk, *unsweetened*, when the vomiting returned. He was then put on hypersaccharated homogenised milk (Lepelletier), and improvement set in immediately.

Spasmophilia associated with Hydrocephalus in the course of Acute Encephalitis.—M.M. Triboulet, Debré and Godlewski showed a boy, aged 10 months, who, at the age of seven months, was attacked with persistent convulsions and a certain degree of chronic encephalitis with acute hydrocephalus. Wassermann reaction both of mother and child was negative. The child had horizontal lateral nystagmus and flaccid monoplegia of the left upper extremity. He subsequently developed Chvostek-Weiss' sign (hyperexcitability of facial), Erb's sign and spasm of the glottis. It was doubtful whether the condition was due to digestive intoxication, parathyroid changes, calcium insufficiency, or to some cerebral condition.

Late Rickets, Osteomalacia and Tetany.—MM. Apert and Lemaux showed a girl, aged 18 years, having the appearance of a child of eight. The pelvis was osteo-malacic, and the neck of the femur softened. She was the subject of epileptiform attacks, and presented symptoms of thyroid insufficiency.

Tuberculous Pulmonary Sclerosis with Bronchial Dilatation.—M. Barbier showed a case in a girl, aged 8 years.

Pernicious Anæmia and Splenomegaly.—M. Barbier showed a girl, aged $10\frac{1}{2}$ years, with this condition, complicated by cutaneous and gastric hæmorrrhage. Treatment consisted of calcium chloride for the hæmorrhage, beef marrow, Fowler's solution alternating with syrup of tartrate of iron and glycero-phosphate of lime, and heliotherapy, *i. e.* exposure to sun's rays twice daily for fifteen minutes. The blood condition was cured, but the enlargement of spleen remained.

Severe Scoliosis treated by Abbott's Method.—M. Lance showed six cases treated by this method.

The Treatment of Port-wine Stains.—M. Albert Weill showed three cases treated by emanations of radium obtained from Lindemann's

ampoules à fenêtre, which allow the passage of rays of feeble penetrative power.

Congenital Syphilis with Motor and Mental Debility and External Ophthalmoplegia.—M. Marcel Nathan.

Mitral Stenosis in a Congenital Syphilitic.—M. Nathan.

Barlow's Disease.—MM. Hallé and Masselot showed the femur of a child, aged 1 year, who died on the eighth day of a severe scurvy. There was hæmorrhagic infiltration of the muscles, thickening and vascularity of the periosteum with subperiosteal hæmatoma.

Albuminous Milk and the Danger of Deprivation of Sugar in Infants.—MM. Nobécourt and Schreiber.—Albuminous milk, according to the formula of Finkelstein and Meyer, differs from ordinary milk in having less sugar and salts and being rich in albumin, the quantity of fat remaining normal. The authors treated twenty-one cases of diarrhœa and athrepsy on this method; in two satisfactory results were obtained, in five doubtful benefit, and in fourteen decidedly bad results. These last, it must be admitted, were children that probably would not have been saved by any method of diet. Vomiting, loss of weight, hypothermia and eczema were noticed. The authors consider that the harmful action of sugar is not evident, and its suppression is useless, and may be detrimental.

Meningitis with Koch's Bacillus and Pseudo-meningococcus.—MM. Salin and D'Allaines reported the case of a child, aged $3\frac{1}{2}$ months, seized with symptoms pointing to tuberculous meningitis, viz. somnolence, convulsions and slight rigidity; but the presence of large numbers of polynuclears in the cerebro-spinal fluid and increase of contractures pointed also to a cerebro-spinal meningitis. Dopter's serum was injected without avail. Koch's bacillus and *Diplococcus flavus* were obtained from the cerebro-spinal fluid. Vincent Dickinson.

Abstracts from Current Literature.

Medicine.

Lumbar puncture in children (*'Post-Graduate,'* 1912, xxvii, *p.* 892).—**G. R. Pisek** uses an aspirating needle sterilised by boiling. The infant is put in the sitting posture, but well forward. The needle is put into the space just above or just below the fourth lumbar vertebral spine, in the median line. At least 15 c.c. may be withdrawn, or in older children up to an ounce; if for the relief of intra-cranial pressure the fluid should flow till all evidence of pressure has ceased. The fluid should be examined macro- and microscopically, and also chemically for dextrose, cholin and neutral fat. Normal fluid is amphoteric, but in meningitis it is acid and dextrose is often absent while appreciable quantities of albumin and globulin are present. Therapeutically lumbar puncture may be useful for relief of pressure symptoms; in sudden collapse with coma, headache, delirium and convulsions by relieving a toxæmia. It also serves for introduction of specific sera,

such as Flexner's serum for cerebro-spinal meningitis, tetanus, antitoxin, etc. J. Porter Parkinson.

Lumbar puncture an aid to diagnosis; its value in relieving convulsions (*'Arch. of Ped.,'* 1913, xxx, *p.* 131).—**L. Fischer** recommends an aspiration empyema needle, and the withdrawal of 15–20 c.c. for diagnostic purposes; if the spinal fluid be turbid then as much as 50 to 60 c.c. should be withdrawn. A dry tap may result from a small needle, and a thick cerebro-spinal fluid from adhesions preventing passage of fluids from the ventricles to the subarachnoid space and from a fibrin clot in front of the needle. To ensure that the needle is in the canal leave it *in sitû* and insert another two spaces lower down, then sterile water injected through the upper will flow out of the lower needle. By lumbar puncture convulsions are far more readily controlled than by chloroform, especially if combined with enemata.
Christopher Rolleston.

A new lumbar puncture needle (*'Journ. Amer. Med. Assoc.,'* 1913, lx, *p.* 1204).—**J. M. Wolfsohn** describes a new and ingenious needle for lumbar puncture by means of which the manometer reading of the pressure can be quickly made, and fluid can be withdrawn or introduced into the spinal canal without much manipulation. An irido-platinum needle 9 cm. long is attached to an elbow into the horizontal arm of which a plug is fitted. This plug can be removed and a stylet inserted should the needle become clogged. The vertical arm is attached to a three-way stopcock, one arm of which comes off at right angles to the direction of the needle and is used to withdraw the fluid. To the vertical arm of the stopcock a manometer can be fixed. When the needle has pierced the skin the indicator of the stopcock is turned towards the manometer, and as soon as the spinal canal has been reached a rush of fluid takes place into the manometer. The pressure is read, and then by turning the indicator the fluid can be run off. Another reading of the pressure can now be made by simply turning the indicator. If serum or other fluid is to be inserted, the manometer is replaced by a syringe. When the operation is completed the stopcock is closed and the needle withdrawn without the loss of a single drop of fluid. T. R. Whipham.

Irrigation of the spinal canal as a preliminary to the introduction of antimeningitic serum (*'Journ. Amer. Med. Assoc.,'* 1913, lx, *p.* 828).—**D. I. Hirsch** advocates irrigating the spinal canal in cases of epidemic meningitis prior to the introduction of antimeningococcic serum. In severe cases the persistence or progression of the infection arises from the inaccessibility of the diplococci in thick exudate in isolated parts of the membrane or in the blocked-up cerebral ventricles, but as it is impossible to say in which cases this is likely to occur the author suggests that irrigation should always be employed. Thirty to 40 c.c. of fluid are first removed by lumbar puncture and then with a small syringe 30 c.c. of normal salt solution at 100° F. are introduced into the canal under gentle pressure. This is allowed to return, and the process is repeated three times in those cases in which the fluid is cloudy, or in purulent cases until the fluid is returned clear. Two cases are reported in which the procedure was successful, recovery being rapid in both instances. T. R. Whipham.

Accidents following the subdural injection of the antimeningitis serum (*'Journ. Amer. Med. Assoc.,'* 1913, lx, *p.* 1937).—**S. Flexner** is of

opinion that the ordinary forms of serum disease which follow the subdural as well as the subcutaneous or intravenous injection of horse-serum may be disregarded as unimportant. A small number of severe accidents, however, including death have been recorded, and these have been variously attributed to (1) anaphylaxis, (2) rapid lysis of the meningococci, (3) excessive intracranial pressure, and (4) poisoning by the phenol preservative sometimes present in the serum. The last hypothesis is disposed of by the fact that similar accidents, though rare, have followed the use of a serum, such as Dopter's, which is supplied without preservative. As regards anaphylaxis severe symptoms have been noted to follow a first injection of the serum, but in other instances a severe reaction has not occurred until after the second or third injection, given at brief intervals. In these the author thinks that anaphylactic shock can be excluded, and he is inclined to the belief that on the whole anaphylaxis is not the cause. In other cases an attempt has been made to explain the severe symptoms sometimes following the first injection of the anti-meningitis serum on the supposition that the serum brings about such a rapid dissolution of the meningococci within the cerebro-spinal exudate as to cause an acute poisoning of the nervous system. This the writer considers is inadequate to account for most instances observed in man, since it does not apply to the cases in which severe symptoms arose, but in which the number of meningococci within the inflammatory exudate was very small, or in which the meningitis had been caused, not by the meningococcus, but by the pneumococcus. The remaining possible source of accident is that of increased intra-cranial pressure, and this Flexner considers the most likely. In this connection it should be recalled that the severest symptoms relate to disturbance of respiration and in a far slighter degree to the heart's action. Cushing states that the medullary centre of respiration already impaired by compression endures an additional burden less well than a medulla not so embarrassed, and has observed that in deaths from a fatal increase of intra-cranial tension arrest of respiration precedes that of the heart. At the inception of the serum treatment it was advised to inject less serum than cerebro-spinal fluid removed and not to employ maximal doses. Various methods of controlling the pressure when injecting the serum also have been advocated, such as allowing it to flow under the force of gravity rather than that of a syringe or by regulating the pressure by means of a manometer. T. R. Whipham.

A possible source of danger in the use of antimeningitis serum (*'Journ Amer. Med. Assoc.,'* 1913, lx, *p.* 1348).—**S. P. Kramer** describes eight cases in which a fatal result apparently followed the injection of anti-meningococcic serum into the spinal canal. The patients were all children between the ages of ten months and ten years. In six cases death occurred from paralysis of the respiratory centre a few minutes after the injection, and in the remaining two the respiratory paralysis was relieved for a time by artificial respiration, but the patients succumbed later from that cause. From the similarity of these cases to those of respiratory paralysis following the lumbar injection of cocaine the author believes them to be toxic in nature. He supposes that the needle enters the central canal of the cord, and that the serum, which should be injected into the subdural space, finds its way to the fourth ventricle. Experimentally 2 c.c. of antimeningococcic serum injected into the vertebral artery, which directly supplies the hind brain, in a dog caused cessation of respiration for ten seconds, and the same result occurred when using ·5 per cent. solution of tricresol in water. Kramer is,

therefore, of opinion that serum containing ·5 per cent. tricresol cannot safely be injected into the subarachnoid space. T. R. Whipham.

Prolonged cerebro-spinal meningitis (*'La Med. de los Niños,'* 1913, xiv, *p.* 17).—**Elizalde** and **Navarro** describe three cases where the disease took an almost chronic course. (1) A child in whom death occurred 16 months after the commencement of the illness. The onset was abrupt and the acute symptoms lasted some weeks. To this succeeded a chronic phase with blindness and hydrocephalus. The cerebro-spinal fluid varied considerably at different times. The meningococcus was still present four months after the onset. (2) A child, aged 4 years, in whom after a short acute stage cachexia brought about death after more than three months. Weichselbaum's meningococcus was present. (3) A child, aged 11 years, where the acute symptoms lasted about a fortnight; the child gradually wasted with many intercurrent symptoms and died three months after admission to the hospital. In this case no organism could be isolated from the cerebro-spinal fluid during the whole course of the disease. The case at first presented signs of a general septicæmia; a week later there was a swelling of the right orbit. The pus was removed; the meninges were found to be normal and there was no improvement in the symptoms. Fourteen days after the operation meningeal symptoms supervened. Post mortem basal meningitis was found and cultures showed Fraenkel's pneumococcus. The writers suspect this was the causal organism. In these chronic cases acute symptoms may occur from time to time. M. D. Eder.

A case of pneumococcus meningitis with normal cerebro-spinal fluid (*'Journ. Amer. Med. Assoc.,'* 1913, lx, *p.* 972).—**J. M. Brady** reports the case of a male infant, aged 1 year, who had signs of pneumonia over the lower lobe of the right lung and of meningitis. On lumbar puncture 4 c.c. of clear serous fluid were withdrawn under less than normal pressure. No micro-organisms were found in the fluid and no increase of the cell-content. The child died the following evening. At the necropsy broncho-pneumonia and fibrino-purulent pleurisy were found in the right lung, and a thick fibrino-purulent meningitis over the convexity and parietal surface of the frontal lobes extending back to the parietal lobes. The base was not involved. The exudate showed an organism corresponding in all respects to the pneumococcus. The thick and tenacious character of the pseudo-membrane covering the brain with almost no liquefaction of this exudate was sufficient to explain the reason for the failure of the cerebro-spinal fluid to reveal the actual condition. The author comes to the following conclusions: (1) The positive diagnosis of pneumococcal meningitis may be impossible during life. (2) A normal cerebro-spinal fluid may be obtained throughout the disease. (3) Anatomical changes (encephalitis, meningitis) occur oftener than is usually believed, and are the explanation of nervous symptoms which have been regarded in the past as functional (meningismus).

T. R. Whipham.

Curable meningeal states in children (*'Arch. de méd. des enf.,'* 1913, xvi, *p.* 44).—**J. Comby** records two cases of the meningeal form of Heine-Medin's disease. Children sometimes present symptoms which at first suggest tuberculous meningitis, or more frequently epidemic cerebro-spinal meningitis. When lumbar puncture is made the clear fluid and lymphocytosis indicate the former disease. Recovery, however, takes place more or

less rapidly without any sequelæ, or else in a few days infantile paralysis develops. J. D. Rolleston.

The tension of the cerebro-spinal fluid in tuberculous meningitis (*'Riv. di Clin. Ped.,'* 1913, xi, *p.* 84).—**E. Palmegiani,** from her extensive researches on this subject, concludes that in this disease there is a tendency to hyperosmosis of the cerebro-spinal fluid, but this tendency diminishes with the progress of the disease. The osmotic density of the blood undergoes the same modification as the cerebro-spinal fluid. From examination of the urine and histological examination of the kidneys she finds that in the great majority of cases there is no parenchymatous lesion so diffuse or so marked as to suggest any deficiency of renal secretion.

Vincent Dickinson.

Lack of equilibrium in tuberculous meningitis (*'Arch. de méd. des enf.,'* 1913, xvi, *p.* 613).—**A. D'Espine** describes a condition called static ataxia as an early sign of the above disease. The child is placed on his feet, and the trunk immediately begins to oscillate and the patient will fall unless prevented. In a case described, post-mortem examination showed a tuberculous lesion of the upper part of the superior vermis and of the cerebellar hemispheres. F. R. B. Atkinson.

Hæmorrhagic pachymeningitis, meningeal hæmorrhage, and tuberculous encephalo-meningitis in a child, aged 2 years (*'Gaz. hebd. des Sci. Méd. de Bordeaux,'* 1913, xxxiv, *p.* 158).—**R. Dupérié** and **E. Dubourg** narrate this case and describe the above conditions found on necropsy. Internal hæmorrhagic pachymeningitis is most frequent at the extreme ages of life. The authors throw no light on the symptoms or diagnosis of pachymeningitis and chiefly discuss the ætiological theories propounded to explain its presence. F. R. B. Atkinson.

Dissociation of axillary and rectal temperature in tuberculous meningitis (*'Thèses de Paris,'* 1912 13, *No.* 328).—**B. B. Rachid.**—In 27 cases of tuberculous meningitis in children aged from 7 months to 11 years, Voisin found 12 whose axillary temperature was higher than the rectal. Normally the axillary temperature is lower than the rectal by 0·5° C. in the adult and 0·4° in the child. Rachid reports a similar inversion of the temperature in a personal case and attributes it to bulbar disturbance.

J. D. Rolleston.

Tuberculous infantile spastic hemiplegia (*'Gaz. internaz. di med. chir., etc.,'* 1913, *p.* 31).—**S. Cannata** records three cases: (1) Girl, aged 6 years, who had had tuberculous peritonitis three months previously, suddenly developed right hemiplegia. (2) Boy, aged 3 years, the subject of glandular and cutaneous tuberculosis, also had a right hemiplegia of sudden onset. (3) Boy, aged 7 years, who presented pericardial adhesions, developed right hemiplegia followed by hemi-tremor. Four days after an orthopædic operation, headache, fever and convulsions took place and death occurred. The necropsy showed a solitary tuberculoma of the left corpus striatum invading the genu and the anterior two thirds of the posterior limb of the internal capsule. In the other two cases it was impossible to say whether the vessels were involved by the tuberculous process or whether a tuberculoma was present. All gave a positive von Pirquet's reaction. J. D. Rolleston.

A new preparalytic symptom of poliomyelitis (*'Journ. Amer. Med. Assoc.,'* 1913, LX, *p.* 813).—**J. A. Colliver** calls attention to a symptom which seems absolutely characteristic of the preparalytic stage of poliomyelitis. The symptom referred to is a peculiar twitching, tremulous or convulsive movement of certain groups of muscles lasting from a few seconds to less than a minute. The amplitude of vibration is greater than a tremor, not so constant and long as a convulsion, and more regular than mere twitching, yet it has some elements of all of these. It usually affects a part or whole of one or more limbs, the face or jaw, but it may sometimes affect the whole body. The symptom may easily be overlooked in the beginning as it usually lasts less than a second, and unless the patient is disturbed does not recur oftener than every hour or so. Later the duration of the spells lengthens to a few seconds, recurring also at shorter intervals. This condition is often accompanied by a peculiar cry similar to the hydrocephalic. At times there is a slight convulsive movement, during which time the child is apparently unconscious with eyes set for a few seconds, and then he apparently becomes perfectly normal again. This brief unconsciousness during which the child's eyes are set may occur without noticeable convulsive movements. It acts thus something like *petit mal*. The writer has observed it as a twitching of the lips with tongue running in and out and a working of jaw, preceding bulbar cases. The phenomenon resembles those found in light cases of strychnine poisoning except that the tetanic contractions are not general and do not last for a long time. They usually involve a set of muscles with one or more of the counter muscles not affected. There is also a similar hypersensitiveness of the skin. The least stimulation of the skin is followed by slight convulsive movements with rigidity of the arms, fingers separated and wrist flexed. When the patient turns in bed, through either an external stimulus or an effort to co-ordinate, the movements are quick and jerky, accompanied usually with slight convulsive movements of the limbs. The least noise produces in certain cases short series of convulsive movements similar to those in strychnine poisoning, only not so general. This symptom seems to be similar to the infection neuroses described by neurologists, of which tetany and chorea are good examples. It is not unreasonable to suppose that the presence of the virus of poliomyelitis may bring about effects similar to those of chorea and tetany. A local chemical or other irritation of the nervous centres is produced, with subsequent fatigue and later recuperation resulting in the peculiar motor phenomenon. The peculiar distribution and lack of co-ordination may be accounted for by supposing that some segments of the cord are affected, while others are not, the exciting cause being œdema, with which hæmorrhage is not uncommonly associated. T. R. WHIPHAM.

Errors of diagnosis in poliomyelitis (*'Arch. f. Kinderheilk.,'* 1913, *Baginsky Festschrift, p.* 801).—**J. Zappert** includes under this title (1) cases in which poliomyelitis was either not suspected at all or at least not at first; (2) cases in which the disease was wrongly diagnosed as poliomyelitis. As examples of the first class he records a case of mild poliomyelitis simulating post-febrile debility but ending in complete recovery, a fatal case of bulbar poliomyelitis resembling laryngeal diphtheria, and another case which was mistaken for acute otitis and commencing pneumonia. As illustrative of the second class he quotes a case of acute articular rheumatism which was at first regarded as poliomyelitis. He combats the view that there is any ætiological connection between acute exanthemata and poliomyelitis, and

regards this error to be due to the frequency of scarlatiniform or morbilliform eruptions as well as of tonsillitis at the onset of poliomyelitis.

J. D. Rolleston.

The contagiosity of Heine-Medin's disease (*'Arch. f. Kinderheilk.,'* 1913, *Baginsky Festschrift, p.* 436).—**J. Langer** gives statistics of the 1909 epidemic of poliomyelitis in the Austrian duchy of Steiermark, which prove the justice of Wickman's contention that poliomyelitis is an acute infectious disease.

J. D. Rolleston.

Acute bulbar palsy following mumps (*'Rev. Neur. and Psych.,'* 1912, x, *p.* 361).—**J. Collins** and **R. G. Armour** record a fatal case in a boy, aged 11 years, in which the symptoms set in a week after a mild attack of mumps. The cerebro-spinal fluid was normal. Death took place forty-eight hours after the onset. Examination of the pons and medulla showed lesions resembling those found in poliomyelitis. The meninges of the brain stem were only slightly infiltrated.

J. D. Rolleston.

Acute encephalitis in children (*'Arch. f. Kinderheilk.,'* 1913, *Baginsky Festschrift, p.* 146).—**J. Comby.**—This may appear at any age, but chiefly occurs in the first years of life. It is frequent in infancy and up to the age of seven years; after ten it is quite exceptional. It may be primary, but is usually preceded by some infectious disease. The cerebro-spinal fluid is normal. The onset is marked by convulsions, which are succeeded by coma and flaccidity or contracture of the limbs. Sometimes recovery takes place without loss of consciousness. Right or left hemiplegia often occur and are associated with mutism or aphasia. The paralysis may persist or pass away without leaving any trace. Paralysis is not the only motor symptom of encephalitis, but it may be accompanied or replaced by athetosis or chorea. Epileptic attacks or imbecility are occasional sequels.

J. D. Rolleston.

A case of vaso-motor hemiplegia (*'Wien. klin. Woch.,'* 1912, xxv, *p.* 1044).—**A. Soucek.**—A boy, aged 10 years, whose father and brother suffered from migraine, was suddenly seized during gymnastic exercise with severe pain in the left temporal region and right hemiplegia. The symptoms disappeared entirely in three days, leaving no residues. The patient was easily excitable, suffered from cold hands and feet, and presented rigid arteries (*vide* British Journal of Children's Diseases, 1911, viii, *p.* 470). The condition was probably due to a cerebral ischæmia caused by vascular spasm similar to that causing nervous angina pectoris or intermittent claudication.

J. D. Rolleston.

Congenital aphasia (*'Pediatrics,'* 1912, xxiv, *p.* 137).—**C. W. Burn** describes the four following cases: (1) Boy, aged 12 years, with motor aphasia and ataxia of the muscles of the face and tongue, and signs of syphilis. Mercury improved the condition to a great extent, but his aphasia remained unaffected. (2) A boy, aged 3 years, who has never talked, but understands spoken language perfectly. Barring his speechlessness his mentality was normal. (3) Boy, aged 7 years. He could not write or understand printed or written words. He could speak a few words immediately after having heard them, but after the fifth year he lost all power to learn any more. (4) A girl, aged 17 years, was picked up while wandering in the streets, and was

found to be speechless save for the words "yes" and "no," not always used correctly. She understands spoken language, and can copy diagrams but not letters. F. R. B. Atkinson.

Neuroses of the sympathetic in children (*'Rev. di Clin. Pediat.,'* 1912, x, *p.* 447).—**E. Gagnoni,** in a paper read at the Italian Pædiatric Congress at Palermo in 1911, describes the symptoms met with in certain children who have characteristic signs of vaso-motor neurosis. Very often there is an inherited taint of neuropathy, arthritism, alcohol, syphilis or tubercle. The author attributes the symptoms to an angioneurosis induced by a functional disturbance, asthenic in character, of the sympathetic nervous system. This system shows a marked vulnerability in such subjects, manifested in vaso-motor disturbances such as spasm or paralysis of the nerves of the various arterial trunks, but especially in the carotid and cœliac axis. The symptoms are headache and digestive disturbances, especially in the stomach, such as sensation of burning, painful crises, hyperacidity, etc. After describing the hygienic, dietetic and therapeutic means which are efficacious in the treatment of these conditions, Gagnoni concludes with a warning as to the disastrous results which may ensue if they are neglected.

Vincent Dickinson.

Implication of the sympathetic: nervous symptoms in diseases of infants (*'Monatsschr. f. Kinderheilk.,'* 1912, x, *p.* 623).—**F. Boschán** has examined 179 infants by means of 1 : 1000 solution of adrenalin dropped into the eye, and finds that mydriasis occurs in all toxic disturbances of nutrition but is absent in healthy children, and he concludes that there is a distinct connection between the toxic diseases and mydriasis occasioned by adrenalin—in other words there is an increase of excitability of the sympathetic as a result of toxic diseases. F. R. B. Atkinson.

Facial hemiatrophy in paralysis of brachial plexus (*'Echo méd. du Nord,'* 1912, xvi, *p.* 609).—**L. Ingelrans** records a case in a girl, aged 5 years, in whom total paralysis of the right brachial plexus had occurred directly after birth and had since persisted. She had also myosis, exophthalmos, and narrowing of the right palpebral fissure. There was no facial paralysis, but there was marked right facial hæmiatrophy with flattening of the cheek and diminution in size of the maxillæ. There were no vaso-motor troubles or cutaneous changes. This is the sixth case on record of facial hemiatrophy associated with paralysis of the brachial plexus. Cournut has suggested that the hemiatrophy is due to injury to the sympathetic fibres of the first dorsal or other branches of the brachial plexus which supply trophic nerves to the face. J. D. Rolleston.

Myatonia congenita (*'Arch. de méd. des enf.,'* 1912, xv, *p.* 881).—**R. Duthoit** has collected sixty-eight cases from literature, including that recently reported by J. R. Charles in the British Journal of Children's Diseases, 1912, ix, *p.* 7, and the following personal case. Girl, aged 2 years. Family history negative. Condition present at birth, but grew worse after measles at fifteen months. All four limbs were affected, especially the legs, as well as the neck and trunk. The face was atonic. Tendon-jerks lost. Electrical reactions diminished in legs, normal in arms; intelligence normal. Marked improvement in five weeks under thyroid extract. The peculiarities of the case were the very marked looseness of the joints, the immunity of

the cranial nerves, and the abdominal type of respiration, the intercostals being atonic. J. D. Rolleston.

Myatonia congenita (Oppenheim) (*'Jahrb. f. Kinderheilk.,'* 1912, lxxvi, *p.* 300).—**O. Thorspecken** describes a case in a girl, aged 4½ years, with the classical symptoms save that there was marked muscular atrophy and dystrophy of the bones. The galvanic current showed partial reaction of degeneration. F. R. B. Atkinson.

Case of amyotonia congenita (myatonia congenita –Oppenheim) with autopsy (*'Am. Journ. Dis. Child.,'* 1913, v, *p.* 359).—**N. C. Foot** gives a very full account of a case of this condition dying at the age of 3½ months, which showed some points of peculiar interest, notably diaphragmatic changes and fatty infiltration of the muscle. He regards the condition as due to arrested development as the result of disease.

Reginald Miller.

Metabolic observations on amyotonia congenita (*'Am. Journ. Med. Sci.,'* 1912, cxliv, *p.* 732).—**J. C. Gittings** and **R. Pemberton** made researches in a case of this disease regarding the amount of calcium and creatinin excretion, and found that there was no marked disturbance in the calcium metabolism but a largely decreased amount of creatinin excretion. The authors draw no conclusions from these results.

F. R. B. Atkinson.

Two cases of a chronic wasting disease in two brothers, diagnosed as (probably) cases of a form of myopathy akin to pseudo-hypertrophic muscular atrophy (*'Austral. Med. Gaz.,'* 1912, xxxii, *p.* 140).—**H. M. Lightoller** describes the cases of two brothers, aged 15 and 13 years respectively, in both of whom at the age of eight the legs gradually wasted and the hamstring muscles began to tighten so that walking was impossible. In the elder boy the arms also gradually wasted and he was unable to feed himself. F. R. B. Atkinson.

Congenital hemispasm of the face (Variot) (*'Arch. de méd. des enf.,'* 1913, xvi, *p.* 292).—**Lesage** and **Gauchery** describe a case in an infant aged 9 months, noticed when the child cried or laughed. More or less marked atrophy of the articular muscle and numerical atrophy of the muscular fibres have been noticed by Variot in the region of the spasm together with bundles of giant-cells in the connective tissue. The condition is familial and hereditary, and gets less in time without disappearing altogether. In the present case when the child breathed the right side of the thorax was fixed. R. D. was not present. F. R. B. Atkinson.

Essential tremor in malaria (*'Gazz. internaz. di med. chir., etc.,'* 1913, *p.* 443).—**S. de Villa** records a case in a male infant, aged 15 months, who five days after an attack of malaria developed an intense oscillatory tremor of the head, trunk and limbs. The movement continued during sleep. The cerebro-spinal fluid was normal, and Wassermann's reaction both in the blood and cerebro-spinal fluid was negative. Recovery took place under quinine. J. D. Rolleston.

Chorea (*'New York Med. Journ.,'* 1912, ii, *p.* 325).—**F. C. Eastman** emphasises the association of hysteria with chorea in some cases. He regards

the seasonal incidence of chorea, with a maximum in the spring months, as in line with a similar maximum incidence of suicide and insanity. He relates a case of chorea showing visual hallucinations of animals, insects, etc., simulating the hallucinations of delirium tremens. As soon as they passed off the child recognised their unreality, but was again frightened on their reappearance. REGINALD MILLER.

Hysterical rhythmic chorea of children (*'Allg. Wien. med. Zeit.,'* 1912, LVII, *pp.* 163, 175, 185, 197).— **A. M. Popoff** summarises the present position of hysteria in children; its proper recognition we owe to Charcot. The most constant symptoms are alterations in sensation and in the sense-organs; the commonest motor manifestations are paralyses, pareses, contractures and convulsions. Not uncommon are also convulsions or automatic movements. These were the prominent symptoms in a boy, aged 11 years, who was plagued by involuntary rhythmical vibratory movements of the head accompanied by similar movements of the left arm and leg. The symptoms had been present for some nine months, commencing as slight jerks in the fingers of the left hand lasting on and off for three days. Then the movements extended to the arm and left leg. For a time they appeared in the right limbs, but returned finally to the left side, and a little later the head commenced to shake. Hemi-hyperæsthesia of the right side and Romberg's side were present. Visual acuity and the visual field practically normal on the right side; on the left almost complete concentric narrowing of the visual field, especially to the inner side; occasionally coloured specks and mistiness. No dyschromatopsia. Diminished hearing on the left side; sometimes noises were heard in the ear. Smell more acute at times. No change in taste. At the slightest stimulus the patient perspired most freely; the legs were always cold. The spinal column was very sensitive. The intellectual functions were normal, but there were some slight affective changes. Treated by warm baths and faradism the patient recovered in a few weeks. A few days after leaving the hospital he had hallucinations and convulsive movements of the right hand, then of the head, and he was again sent into hospital. Under suggestion without other treatment the symptoms disappeared in fourteen days. Popoff regards the prognosis as favourable. M. D. EDER.

Paraplegia, probably hysterical in origin (*'New York Med. Journ.,'* 1912, I, *p.* 1205).—**S. Parker** narrates the case of a boy, aged 12 years, suffering from symptoms very similar to Landry's paralysis occurring after a severe toothache. The offending tooth was removed and all the symptoms vanished. F. R. B. ATKINSON.

Institutional treatment of hysteria in children (*'Jahrb. f. Kinderheilk.,'* 1912, LXXVI, *p.* 283).—**F. von Reusz** recommends this form of treatment, laying down the following principles: (1) Complete rest from all exciting influences. (2) Removal from the surroundings to obtain an absolute cure, and to prevent the disease from becoming serious. (3) Absolute suppression of the patient's self-importance and exaggeration of his personality by strong discipline. (4) Physical and medical treatment where necessary. F. R. B. ATKINSON.

Masturbation before school age (*'Arch. f. Kinderheilk.,'* 1913, *Baginsky Festschrift*, *p.* 497).—**E. Neter** has observed twenty-six cases, eighteen in girls and eight in boys, in all of whom the habit could be traced back to the first

year or eighteen months of life. Generally speaking they were healthy, children, and the practice had either not been observed or else misinterpreted by their parents. No local or general cause could be found, and in none was it possible to trace any connection between precocious masturbation and a neuropathic constitution. A pathological condition of the nervous system, such as convulsions, tetany, epilepsy, or enuresis, was not more frequent in these than in other children. No appreciable bad effects could be attributed to the practice in any case, though its influence upon the future sexual life of the individual was an important question. In the treatment Neter recommends constant supervision and mechanical suppression of the act. The removal of so-called ætiological factors such as phimosis or worms was a matter of course, but was unimportant. More attention should be paid to the possible presence of urticaria or of constipation. A review of the literature is appended (*cf.* British Journal of Children's Diseases, 1912, ix, *p.* 381). J. D. Rolleston.

The relation of prolonged pregnancies to some cerebral lesions and to backward mental states (*'Am. Journ. Obst.,'* 1912, lxvi, *p.* 1059). —**H. L. Winter** states that 5 per cent. of all pregnancies are prolonged beyond the normal limit. Of 785 mentally deficient children, 75, or over 9 per cent., are known to have been born after prolonged pregnancies, the periods of gestation being 289 to 290 days in 6, 290 to 300 in 22, 300 to 310 in 39, and over 310 in 8. As would be expected the weight of such children was excessive: in 4, 8–10 lb.; in 13, 10–12 lb.; in 6, 12–14 lb.; in 3, 14–15 lb.; and 16 lb. in one case. Post mortem, two of the brains presented no gross lesions, 10 showed one or more areas of cystic degeneration, and 5 unequal development of the cerebral hemispheres, the skull being asymmetrical and flattened over the undeveloped area. The degree of mental deficiency varied directly as the amount of injured brain substance. Injury occurs owing to increased pressure *in utero* and during parturition. Podalic version should be preferred to delivery by forceps. Christopher Rolleston.

Mental deficiency (*'Arch. of Ped.,'* 1912, xxix, *p.* 596).—**Mark Reuben** states that in the United States 1 in every 150 of the population is either idiotic, insane or epileptic. The normal population has increased 3½ times, the aments 15 times in the last 50 years: 66 per cent. are of native, 22 per cent. of foreign, and 15 per cent. of mixed parentage; males predominate over females. The importance of heredity is emphasised by the fact that of 2013 children born to families where mental deficiency existed, 434 were aments and 160 criminals or paupers. Epilepsy occurring in infancy causes mental defects in 55 per cent. of the children. Two thirds of all infants with birth palsies devolop epilepsy, and two thirds of these become mentally deficient. Two thirds of all idiots are of scrofulous diathesis and die of tuberculosis. With reference to syphilis it is mentioned that in 1269 families there were 245 aments and as many as 170 stillbirths. The high percentage of diplegias giving a positive Wassermann is noted. The brains of idiots are lighter, often asymmetrical, with diminished number and simplification of the convolutions. Microscopically, the most common change is sclerosis. Idiotic babies even of a year old do not follow a light or recognise their parents. The palate is normal in half, narrow and high in the great number of those deformed. Among Mongols most commonly the vomer may project into the naso-pharynx and cause obstruction. Retino-choroiditis, vitreous opacities, old inflammation of the iris point to a luetic origin. Cohn found

pallor of temporal and œdema of nasal half of the disc in 7 out of 29, and a normal fundus in only 2 out of 53. In 8 of these generalised pallor of the disc was noted. Ambidexterity is more common than in normal children. Idiots have difficulty in suckling and perform constantly repeated movements, most commonly finger-sucking and pelvic rocking (habit-movements of Attwood Clarke), which appear to give them pleasure, and are probably a substitute for masturbation. In regard to diagnosis much stress is laid on family history and the time of acquisition of speech and walking. Prognostically, considerable improvement may be hoped for in microcephalics; the outlook in syphilitic idiocy is bad owing to the development of general paralysis, and epileptic idiocy is one of the most hopeless varieties.

CHRISTOPHER ROLLESTON.

The mental defective and society (*'Arch. of Ped.,'* 1913, XXX, *p.* 203).—**W. L. Stowell** describes his eighteen years' experience as physician to a feeble-mind institution containing 1186 aments on Randall's Island. Stress is laid upon the importance of music and the feasibility of teaching aments to be bandsmen. According to the author's figures six is the average number of the family in which aments are found, a marked contrast to the three of the normal American household. Among 2000 prostitutes 29·2 per cent. were of subnormal intelligence, showing that feeble-mindedness is two hundred times more common among this class than among women of other occupations. As regards prognosis, the figures by Caldecot of Earlswood are given which apply to 341 persons discharged from that institution during the last fifteen years. 3·25 per cent. were earning wages, 3·81 were at home and very useful, another 7·5 per cent. were at home and of some use, while the remaining 85·5 per cent. were of no use and should have been retained in the asylum. The average age at death of 500 inhabitants of Randall's Island was only thirteen years. Hence normal persons live three and a half times as long as aments. Thirty per cent. of these 500 aments died from pneumonia, and 23 per cent. from inanition.

CHRISTOPHER ROLLESTON.

Imbecility and idiocy (*'Deutsche Ærzte-Zeitung,'* 1912, *No.* 13, *p.* 193).—**Becker** regards the pessimistic views held about the treatment of imbeciles and idiots as quite unwarranted. He agrees with Ziehen that there is no case of congenital feeble-mindedness which cannot be improved by proper educational and medical methods. The thyroid gland has shown what can be done in some cases; syphilis and rickets are other root causes which must be energetically dealt with. Perhaps every imbecile should receive anti-syphilitic treatment. Moral insanity, always regarded as so unfavourable, has been shown to be curable. Pachantonis recently published five cases, three of which were cured and two improved. In imbecility improvement takes place in the decennium following puberty.

M. D. EDER.

Ophthalmology.

A study of ophthalmia in the newborn (*'Amer. Journ. Obst.,'* 1912, LXVI, *p.* 866).—**A. W. Tallant** presents a study of thirty-one cases of ophthalmia neonatorum. The author accepts the usual classification, namely, (*a*) ante-partum or intra-uterine—cases developing before birth; (*b*) primary—the infection received at birth, the disease developing from the first to the fifth day inclusive; (*c*) secondary—the disease appears after

the fifth day, and is, therefore, not a birth infection, but has been acquired later from the mother or from another source. The gonococcus was the causative organism in the majority of cases. The severity of the disease in the mother did not bear any direct relation to the virulence of the infection in the infant. In the majority of the cases the temperature was normal throughout, and in four in which there was a marked rise of temperature there were other causes to account for this. The infants were all of average development. From the study of the general condition of the child it was concluded that it was not necessary to separate the child from the mother, even if she be diseased, since her milk is not affected and the babies do much better if breast-fed. Treatment was carried out on the usual lines.

J. Allan.

The incidence of ophthalmia neonatorum in London (*'Brit. Med. Journ.,'* 1913, I, *p.* 1099).—**N. Bishop Harman** comments on the first official statement recently issued on the incidence of purulent conjunctivitis in the newborn in London. The incidence was 0·843 per cent., and corresponds to the figure (0·867 per cent.) obtained by the author in a private census undertaken by him in 1906. He thinks it would be advisable to make compulsory the use of prophylactic measures, and he emphasises the importance of the necessity of curing the mother. The report shows that in 40 per cent. of the mothers whose babies contracted the disease there was a history of vaginal discharge.

J. Allan.

Prophylaxis of blenorrhœa neonatorum (*'St. Petersburg. med. Zeitschr.,'* 1913, XXXVIII, *p.* 134).—**Weidenbaum** recommends tablets of 0·1 grm. arg. nitr. with 0·1 grm. potassium nitrate. For a 1 per cent. solution the tablet is dissolved in 10 c.c. of boiled water. This freshly prepared solution of the required quantity is far better than the usual solutions, which frequently precipitate silver salts and give rise to inflammatory conditions. It is especially advisable for the use of midwives and nurses.

M. D. Eder.

Case of congenital cataract (*'Cleveland Med. Journ.,'* 1913, XII, *p.* 147).—**W. C. Tuckerman** presented a boy, aged 8 years, with bilateral congenital cataract. Family history negative and no history of syphilis. Shortly after the birth of the child the parents noticed that the left eye squinted. The right eye began to show change. Two years ago the vision of the right eye for distance was $\frac{20}{120}$, of the left $\frac{20}{200}$; for near vision that of each eye was $\frac{1}{10}$. Vision is now about the same and visual acuity of both eyes is about the same. The cataract of the left eye appears to be posterior conical, of the right zonular. In the author's opinion operation was the only procedure which offered hope for improvement.

J. Allan.

Burn of eyeball due to caustic contents of golf-ball (*'Journ. Amer. Med. Assoc.,'* 1913, LX, *p.* 1297).—**L. W. Crigler** reports the case of a boy, aged 10 years, who, while dissecting a golf-ball, ruptured the small rubber bag in the centre of the ball, the contents spurting into his right eye. This caused immediate excruciating pain, lachrymation, photophobia, redness and œdema of the conjunctiva. The surface of the cornea became opaque and the eye presented the picture of a typical caustic burn. Eventually the cornea became slightly more transparent and the vision slightly improved, though the sight remained much impaired. An analysis of the paste in the

centre of a golf-ball similar to that causing the accident showed that it consisted of a mixture of barium sulphate, soap and a free alkali (sodium hydroxide 2·4 per cent.). T. R. Whipham.

Chancre of the palpebral conjunctiva (*'Thèses de Paris,'* 1912–13, *No.* 433).—**M. Koupliansky** has collected 53 cases from literature, including 7 in children aged from eight months to fifteen years. Ocular and palpebral lesions are predisposing causes, especially those characterised by erosions and excoriations like pruriginous blepharitis. Contamination usually occurs by the use of infected towels, kissing, or extraction of a foreign body from the eye by the tongue of an infected person (*cf.* British Journal of Children's Diseases, 1912, ix, *p.* 136). J. D. Rolleston.

Blue sclerotics and brittle bones (*'Klin. Monatsbl. f. Augenheilk.,'* 1913, li, *p.* 594).—**A. Peters,** who had previously recorded the occurrence of blue sclerotics in four generations, in answer to an inquiry by Conlon investigated the question of multiple fractures in his cases, and found to his surprise that three members of the family, the father and his two sons, had brittle bones. Peters lays stress on the practical importance of the connection of blue sclerotics with brittle bones, and thinks that surgeons and ophthalmologists should adopt prophylactic treatment by forbidding gymnastic exercise and military service in cases of blue sclerotics. J. D. Rolleston.

Five generations of blue sclerotics and associated osteoporosis (*'Boston Med. and Surg. Journ.,'* 1913, ii, *p.* 16).—**F. A. Conlon.**—Of twenty-seven individuals in these five generations eighteen had blue sclerotics and five of the latter brittle bones (*cf.* British Journal of Children's Diseases, 1911, viii, *p.* 202, and 1912, ix, *p.* 376).

J. D. Rolleston.

A case of enlargement of the eyeball (*'Ophthal. Rev.,'* 1913, xxxii, *p.* 137).—**R. Beatson Hird.**—A boy, aged 11 years, came under observation in May, 1912, because he could not see the blackboard at school and because one eye was larger than the other. The latter condition had been noticed since birth and did not appear to have got any worse. The left palpebral fissure was a little larger than the right, and this in spite of the fact that if anything there was slight enophthalmos. The corneal diameters were as follows: right vertical, 11 mm.; horizontal, 11 mm.; left vertical, 13 mm.; horizontal, 14 mm. The pupil reactions were normal, but the left was larger (4 mm. diameter) than the right (3 mm. diameter). There was no tremulousness of the iris of the left eye. The left anterior chamber was distinctly deeper than the right. Intra-ocular tension was quite normal in both eyes. There was no evidence of stretching or thinning of the sclerotic coat of the left eye. Fundi were normal. The child was myopic and suitable lenses were ordered. The boy was seen in February of this year and the glasses required slight alteration, but in other respects there had been no change. The author thinks this is a case of simple hypertrophy of the globe.

J. Allan.

Elephantiasis phlebectatica (*'Ophthal. Rev.,'* 1913, xxxii, *p.* 192). —**Wützold** reports the case of a boy, aged 14 years, who in his eighth year suffered from extremely severe swelling of the right ear. Soon thereafter he complained of swelling of the eyelids, this gradually increasing in the course of a year till the doughy mass involved all the tissues above nose and

lips. Round the eyes the tissue is now hard and cicatricial. There was no history either of ulcers or of lupus. The bony margins of the orbit are thickened and made coarser from involvement of the periosteum; the orbicularis oris is much infiltrated, and at the angles of the mouth are hard nodules the size of a cherry; the veins of the whole face are greatly distended. The origin of the condition is quite uncertain. J. Allan.

Malignant growth of the orbit (*'Cleveland Med. Journ.,'* 1913, xii, *p.* 146).—**S. S. Quittner** reported a case of malignant disease of the orbit in a boy, aged 7 years. Four and a half months previously a burning match came in contact with the left upper lid. Shortly afterwards a small tumour mass appeared in the same lid. This was removed, but it recurred and was again removed. It had since returned again and had grown very rapidly, forming a large tumour mass, probably sarcoma, which was considered inoperable. From the X-ray plates it was impossible to say whether the tumour originated from the bone or from the contents of the orbit. Vision of the right eye has remained normal, but recently this eye has began to show some photophobia. Loss of weight and pyrexia are other recent symptoms.

J. Allan.

The diagnosis of optic neuritis by the ophthalmoscope (*'Arch. f. Kinderheilk.,'* 1913, *Baginsky Festschrift*, 1913, *p.* 511).—**R. Paderstein** describes the following appearances met with in children: (1) The boundaries of the optic sheath become adherent if œdema of the tissue, optic nerves and retina occurs. (2) The optic sheath is redder than normal. (3) The papilla becomes enlarged, round or oval. (4) The papilla becomes prominent. This is an important point. (5) The veins become full, tortuous, and broader than normal. F. R. B. Atkinson.

Optic atrophy of alcoholic origin in a child (*'Gaz. Internaz. di med. chir., etc.,'* 1913, p. 415).—**S. de Villa** records a case in a girl, aged 4 years. Both parents were heavy drinkers, and the child had been given large quantities of wine from the age of two months. Ophthalmoscopy showed incipient atrophy of both optic nerves and stasis of the papilla on the right. All other causes of optic atrophy could be excluded. There were no other nervous symptoms beyond some tremor of the upper limbs. Wassermann and von Pirquet negative. Considerable improvement followed enforced abstention from alcohol and a well-regulated diet.

J. D. Rolleston.

An interesting case of retinal disease (*'Ophthal. Rev.,'* 1913, xxxii, *p.* 188).—**L. Werner** reports an unusual case of obstruction of retinal circulation in both eyes in a boy, aged 11 years. The left eye became suddenly blind while he was at his lessons, and three days afterwards the sight of the right eye went in a similar way. The ophthalmoscopic signs were those of blocking of the central artery, with breaking up of the blood column in the vessels. In the second stage the left optic disc became swollen to such a degree as to resemble a choked disc, and in both eyes white stars of exudation developed at the macula. Perception of light was absent in the right eye for twelve days and in the left for four; nevertheless vision improved to $\frac{6}{36}$ in the former and to $\frac{6}{24}$ in the latter.

J. Allan.

Crater-like hole in the disc associated with changes at the macula (*'Ophthal. Review,'* 1913, xxxii, *p.* 38).—**R. R. James.**—The patient, a boy, aged 6 years, came under observation because of squint, and during the ordinary routine examination the changes in the fundus were seen. The disc was paler than usual, but not enlarged. Just below the horizontal meridian of the disc on the temporal side was seen a hole which reached at one spot up to the pigmented edge, and had steep upper, lower and outer edges, while the inner edge was more sloping. As regards the macula, the central part was of a dull yellow colour, while there was a massing of fine pigment round the edge. Reference is made to the literature on this subject.

J. Allan.

An analysis of three hundred cases of high myopia in children, with a scheme for the grading of fundus changes in myopia (*'Ophthal. Rev.,'* 1913, xxxii, *p.* 186).—**N. Bishop Harman** collected these cases during educational work in London. Girls were more frequently affected than boys, there being a difference of 6 per cent. The degree of myopia ranged from 4 to 25 D.; the bulk, 64 per cent., were from 6 to 12 D. The extreme degrees were nearly all in girls. Hereditary influence was marked in 9 per cent. Astigmatism, which the author considers a most likely exciting or adjuvant cause of myopia, was present in 64 per cent.—a far higher proportion than in other defects. Previous keratitis was found in 11 per cent. Congenital defects such as albinism, coloboma uveæ, dislocated lenses, aniridia, existed in 5 per cent., squint in 4 per cent., nystagmus, mostly associated with bad vision, in 7 per cent. The lens had been removed by operation in 3 per cent., but the improvement of vision was not great. Dealing with fundus conditions the author criticised adversely their present nomenclature for changes about the disc; he proposed that the fundus should be spoken of as first, second or third degrees according as the atrophy at the disc was as wide as half the disc diameter, the whole diameter, or greater than that. To this would be added other details about the macula, etc. He maintained some definite notation was necessary when these cases came under observation for a definite object such as the regulation of education.

J. Allan.

Functional treatment subsequent to operation in cases of strabismus (*'Ophthal. Rev.,'* 1913, xxxii, *p.* 192).—**C. Adam** makes a strong appeal for exercises in vision and in fusion supplementary to mere operation in the treatment of strabismus.

J. Allan.

Report on the possible effect of needlework on the eyes of young children, shown by a comparison of errors of refraction in "entrants" at age 5 and "leavers" at age 12 of both sexes (*'School Hygiene,'* 1913, iv, *p.* 35).—**A. A. Parson** finds that the children at age 5 apparently start school with the boys and girls having much the same number of defects, the advantage being with the girls. But at the age 12 there is a marked difference, the girls having much higher defects than the boys, the increase being in defects of myopia, myopic astigmatism and mixed astigmatism. These children are all under the same home conditions, and the same conditions at school of lighting, ventilation, etc., with the exception of needlework. The author thinks that sewing should not be done in the infant rooms, and might well be postponed until the child reaches a later age, such as eight.

J. Allan.

Reviews.

Epidemic Infantile Paralysis—Heine-Medin Disease. By Professor Paul Römer. Translated by H. Ridley Prentice. London: John Bale, Sons and Danielsson, 1913. Price 7s. 6d. net.

Several excellent monographs on poliomyelitis have appeared during the past few years. None are so complete and so well arranged as that by Römer. He deals with the history of the disease, the symptomatology in man, with the experimental work on monkeys and other animals; with the pathology, the epidemiology and the prophylaxis.

For those who are not sufficiently well versed in the German language, a translation of the excellent monograph is desirable, and the present is in every respect admirable. It is easy to read, the sentences are well formed, and are not a simple word-for-word translation of the German, which often makes such unpleasant reading.

Not only has the translator taken the trouble to give readable English, but he has also brought the book up to date by adding certain new work which has appeared since 1911, when Römer's monograph was published.

As an instance of this may be quoted the experiment of H. K. Marks on rabbits, who has shown that rabbits may transmit poliomyelitis, although they do not manifest the clinical features nor show the pathological changes of the disease which are regarded as characteristic in monkey and man. He has also brought the epidemiology up to date, for he has added an account of the English epidemics of 1910 and 1911 which do not appear in the original. The translator has not been able to insert the work of Kling Wernstedt and Pettersson, although he mentions their monograph on the subject.

Possibly it is as well that he has not dealt with this, for its insertion would mean a considerable alteration in the text of the work, which is not the function of the translator.

It is difficult to speak sufficiently highly of the manner in which Dr. Prentice has executed the work, not only of a translator, but also of reviser so far as that is essential. F. E. B.

Lectures on Diseases of Children. By Robert Hutchison, M.D., F.R.C.P. Third edition. Pp. 404, with 69 illustrations and 13 diagrams. London: Edward Arnold, 1913. Price 10s. 6d. net.

Dr. Hutchison's book is deservedly popular, and a third edition has now been called for. The new issue has been revised, and contains additional lectures on cœliac disease, which the author describes as a clinical entity, hysteria in childhood, and some common affections of the genito-urinary system. A fresh lecture on disorders of the heart is concerned mainly with congenital anomalies, and two new lectures on pneumonia greatly increase the value of that portion of the book which deals with respiratory diseases in childhood. Several new illustrations are also included.

The author's teaching is sound and practical throughout, and is mainly the outcome of his own experience, which gives it especial value. The new lectures fully maintain the high standard of the original ones, and the book should continue to prove of great use to students and also to practitioners who wish to revise easily their knowledge of children's diseases. A detailed description of the book is almost unnecessary; for those who know it not it

is sufficient to say that it consists of a series of lectures on various diseases of childhood (it does not profess to comprise the whole subject), written in a colloquial style which renders it easy reading. It is, however, a pity that the author's colloquialism should lead him to use such an expression as "the left heart." This term is becoming unfortunately all too common among medical men; it is not accurate, and does not sound well coming from the lips or pen of a master in medicine.

The book is well got-up, and the reproductions of photographs are in every way excellent. T. R. W.

La Pratique des Maladies des Enfants. Vol. VIII: Chirurgie du Crâne, du Rachis, du Thorax, du Bassin, et des Membres, Orthopédie. Par MM. Denucé et Nové-Josserand. Paris: J. B. Baillière et Fils, 1913. Pp. 574, with 287 illustrations. Price 14 fr., paper cover; 15 fr. 50 c., bound.

The eighth fasciculus of this large work upon the diseases of children is fully up to the standard that would be expected from two such well-known surgeons as Denucé and Nové-Josserand. If we miss certain items of information and certain discussions that we should expect to find in an English text-book, this is amply compensated for by the inclusion of much in the shape of French methods that are unfamiliar in this country. The first part of the volume, by Nové-Josserand, includes a valuable account of fractures as they occur in children, with special reference to the position of the epiphyseal lines, and to the part they play in such accidents. The author, it will be noted, prefers fixation to early movement, and devotes considerable space to a description of methods of reduction and of fixation in plaster. In the description of some of the more rare deformities a good deal in the way of recent observations and theories is omitted. For example, the relation of the so-called congenital dislocation of the shoulder to birth palsy is passed over, as also the presence of defects of the ribs and spine in congenital elevation of the scapula, and the epiphyseal origin of Madelung's deformity is not mentioned. Under hip disease and tuberculous disease in general conservative treatment is advocated, considerable attention being paid to plaster technique. The description of the occurrence of early dislocation in hip disease—a point which seems to have escaped attention in this country—is important. One of the best parts of M. Nové-Josserand's section is that devoted to congenital dislocation of the hip. The stages in the formation of a stable joint after reduction of the dislocation are carefully described, and though the study of these is of course at present incomplete, a knowledge of them must ultimately form the basis for fixing the duration of after-treatment. The author prefers the fixation of the hip from the first in the position of internal rotation—an awkward position, but one which is undoubtedly successful in keeping the head of the femur in the joint.

The second part of the volume, by M. Denucé, is specially notable for the most careful descriptions of the pathology of the conditions included, commencing with a thorough consideration of spina bifida, cephalocele, and sacro-coccygeal tumour. The treatment of Pott's disease is upon the usual conservative lines, the use of the plaster bed and of fixed plaster-of-Paris jackets being advocated. Scoliosis fills a considerable section of this part of the volume, and, as is usual in French works, much attention is paid to the statical causes of the deformity. Treatment by exercises in which selections are made from all systems—Swedish, German, Klapp's creeping exercises,

etc.—are described at length, but very little attention is paid to other methods. R. C. E.

How to diagnose Smallpox: A Guide for General Practitioners, Post-Graduate Students and Others. By W. McC. Wanklyn, B.A., M.R.C.S., L.R.C.P., D.P.H., Assistant Medical Officer of the London County Council, and formerly Medical Superintendent of the River Ambulance Service (Smallpox) of the Metropolitan Asylums Board. With illustrations. London: Smith, Elder & Co., 1913. Price 3s. 6d. net.

The yearly increase in the number of exemptions from vaccination granted to conscientious objectors, the long immunity of London and the provinces from an epidemic, and the lack of familiarity among the profession with this disease, all render the appearance of this book remarkably opportune.

The writer is well qualified for his task, as his experience of smallpox extends over twenty years and includes the London epidemic of 1901-2, in which he had to revise the diagnosis of some 10,000 cases.

The opening chapters show how almost every outbreak in London in recent years has been started or propagated and prolonged by unrecognised cases.

In the third chapter practical points in the method of examination are described, and the importance of obtaining a view of the whole surface of the body and the necessity of a good light are emphasised. Unless these conditions can be obtained, an opinion should be withheld.

Like Ricketts the writer attaches the greatest importance to the distribution of the eruption, and draws special attention to the presence of irritation in determining the incidence of the rash.

He regards as of much less value the traditional hall-marks of smallpox, viz. umbilication, shottiness and multiloculation of the pocks. Umbilication, he shows, is only transitory, and in the worst and most infectious cases may be absent; shottiness may be present in acne, chickenpox in adults, and mosquito bites, and be absent in the malignant cases in which the skin shows no reaction; and unilocular lesions may be present in smallpox.

That reliance in the history is one of the commonest sources of error is strikingly illustrated by cases of chickenpox in adults, in whom the onset is apt to be severe.

An instructive list is given on p. 62 of 607 cases wrongly certified as smallpox during 1902. Chickenpox, measles, acne and syphilis were the diseases in which mistakes were most frequently made, but lumbago, rheumatism and appendicitis also figure in the list as well as a group of diseases which did not appear to have the remotest resemblance to smallpox, such as pulmonary tuberculosis, bronchitis, acute mania, cerebral tumour and mastitis.

An important chapter, illustrated by diagrams, is devoted to initial rashes, which are classified into two groups, the one "petechial, persistent, and sinister," and the other "erythematous, fugitive, and benign." In Chapter X attention is drawn to the close resemblance between measles and smallpox in the early stage, but, curiously enough, nothing is said of the diagnostic value of the catarrhal signs and of Koplik's spots, which we have often found of the greatest service in the diagnosis of cases of measles wrongly certified as smallpox.

This is the only important omission which we have detected, though we think that something might have been said on the resemblance of smallpox to

syphilis, so many cases of which, as already stated, were erroneously certified in the last London epidemic.

With these reservations we can heartily recommend the book. Dr. Wanklyn possesses the gift of exposition, and writes with the authority, at times iconoclastic, that his long experience justifies. J. D. R.

Puériculture et Pouponnières. Par Le Dr. R. Raimondi, Médecin en chef de la Pouponnière, Directeur des services de l'Institut de puériculture de Porchefontaine, Inspecteur des Écoles de la Ville de Paris. Paris: Librairie J. B. Baillière et Fils, 1913. Price 1 fr. 50.

In this interesting and practical little brochure the author discusses the question of puericulture, or child-rearing. During infancy and early childhood the children are fostered in a special building under medical supervision. The account given of the medical organisation indicates that such supervision is very complete. Very stringent precautions are taken to guard against the introduction of contagious diseases; only healthy babies are received, and those in charge must also present a clean bill of health. We note that the author recommends the introduction of camphorated vaseline into the nose as a prophylactic in catarrhal affections of influenza. No doubt this procedure is perfectly safe when carried out under medical supervision; but it should be pointed out that in unskilled hands it may be followed by most alarming symptoms. The Institute of Puericulture serves as a sort of training school; and the courses of instruction for junior and senior pupils are given. The question of animal milk for infants is discussed; and the relative value of goat's milk, ass's milk and cow's milk is examined. There is a very good description of the development and progress of a model dairy farm attached to the Institute. In the concluding chapter the author deals at some length with the methods adopted at the Institute for the hygienic rearing of children. The little volume is well worth reading, and can be commended to all interested in this subject.

J. A.

Maladies des Capsules surrénales. By Emile Sergent. (Extrait du 'Traité de Thérapeutique pratique publié sous la direction de Albert Robin.') Paris: Vigot Frères. Pp. 19.

This reprint of an article on the therapeutic uses of suprarenal products gives an interesting summary of our knowledge on the subject. After a short introduction on the general pathology and treatment of the morbid conditions of the adrenals, the symptoms of Addison's disease and of adrenal insufficiency are tabulated, and here the author takes up the attractive but somewhat debatable view that the pigmentation is due to mechanical irritation of the sympathetic nerves by the suprarenals, and that it is not the result of insufficiency. The methods of treatment are fully described, and then the various diseases on which suprarenal products have been employed are mentioned. Under the latter heading reference is made to Bernard's case of osteomalacia in which improvement began after the thirtieth injection of a cubic centimetre of a 1 in 1000 solution of adrenalin; this case certainly shows that this treatment takes time, for the injections were given three times a week for three weeks out of four, and the patient received 103 injections. Bernard has collected no less than twenty cases of osteomalacia which have been cured or improved by this kind of treatment. The article proves a useful source of reference on suprarenal medication.

H. D. R.